ENGINEERING NEWS-RECORD

A McGRAW-HILL PUBLICATION

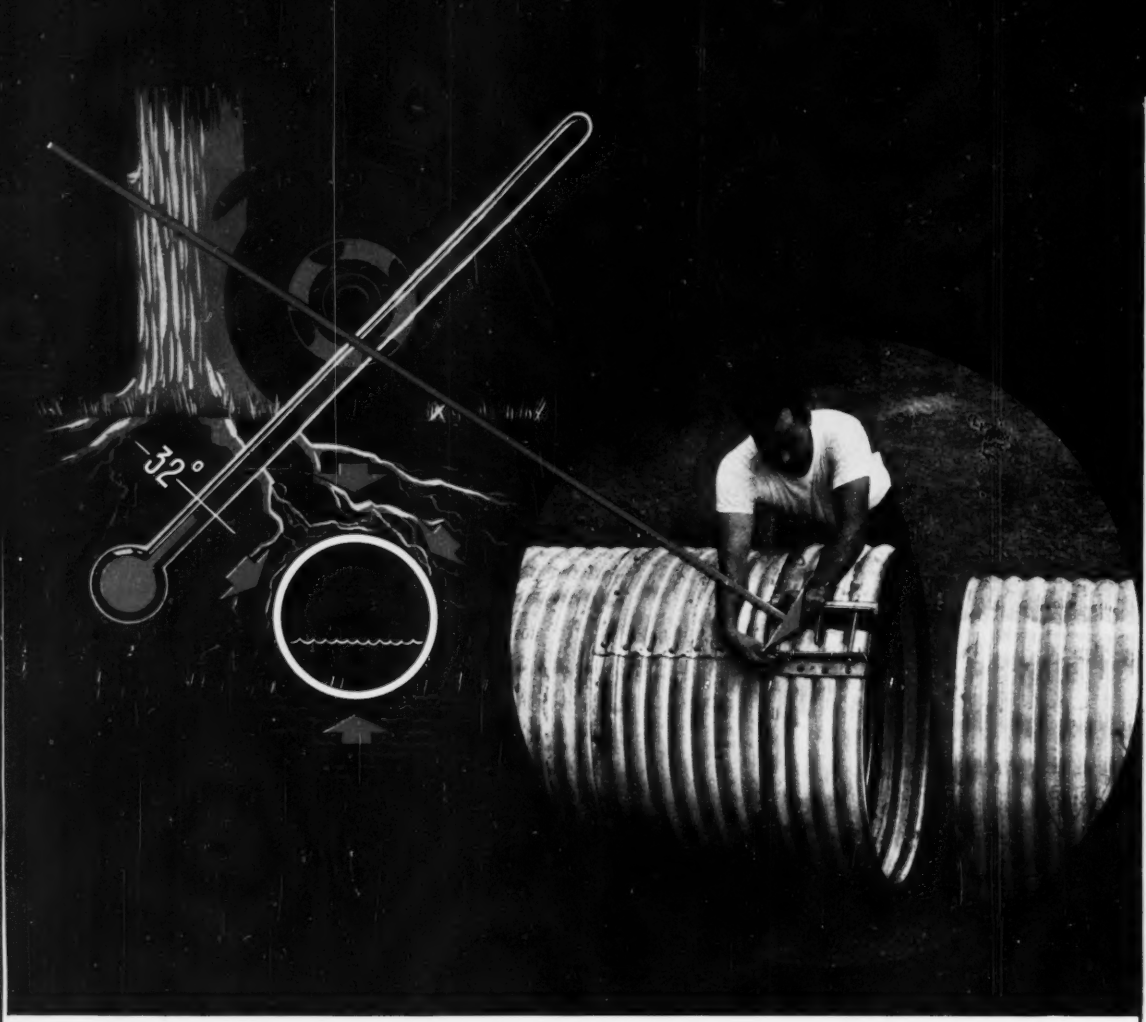
DECEMBER 8, 1949

Sidney H. Bingham—Engineer runs world's biggest rapid-transit system (see p. 12)

COMMENT ON "LET'S SELL WATER"

• • •

GOOD PLANNING SPEEDS HOSPITAL



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Here's one drainage pipe that knows the right people. Long ago Armco engineers decided that nothing was going to push this pipe around.

They considered the impact and vibration of heavy traffic, shifting soils, frost action, unstable foundations and other hazards. Then Armco engineers carefully designed a connecting band that makes each joint as strong as the rest of the pipe. The result is a product that can be installed with complete confidence in its continuing efficiency as a conduit. No danger of mal-alignment. No open joints to invite tree roots or clogging from silt. Armco Corrugated Metal Pipe has proved ideal for sewers, culverts and similar drainage structures.

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If you use water hose don't be satisfied without knowing what developments BFG may have made in hose for your particular type of service. To make sure you get the longest life from water hose, see your local BFG distributor. *The B. F. Goodrich Company, Industrial and General Products Division, Akron, Ohio.*

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ENGINEERING NEWS-RECORD

VOLUME 143 DECEMBER 8, 1949 NO. 23

WALDO G. BOWMAN
Editor

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YOUR Northwest Pullshovel is one of the most versatile tools in the "deck." Sewer trench and waterline trench—wide, narrow, deep, shallow—are handled fast and easily. Northwest gives you plenty of boom for deep digging or side casting.

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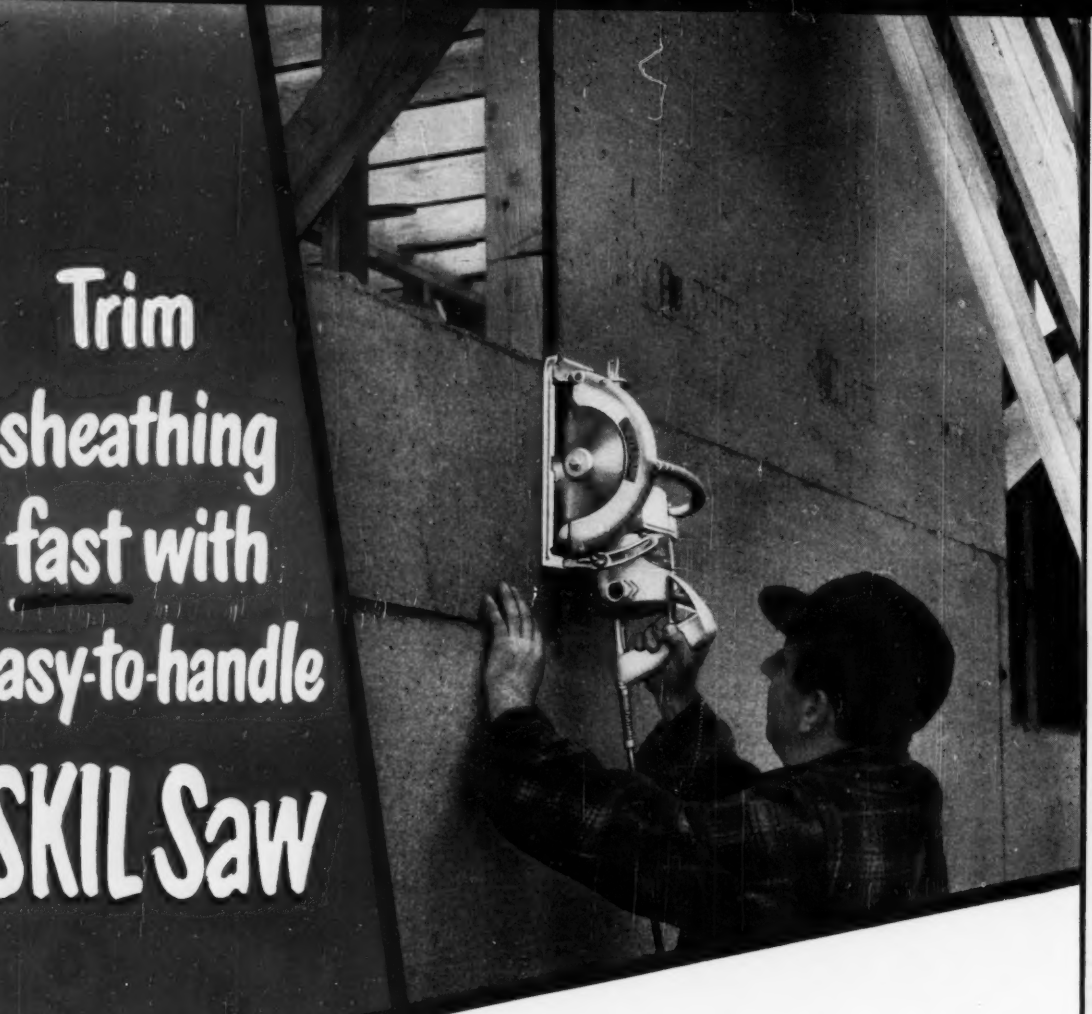

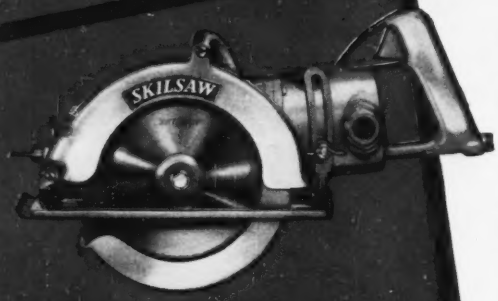

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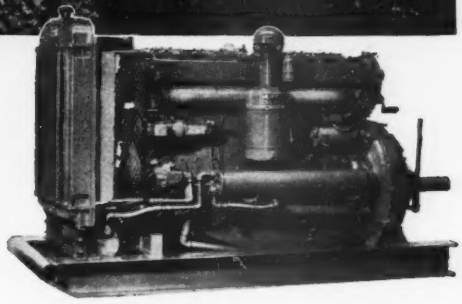


MURPHY DIESEL

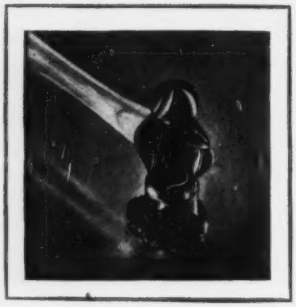
Heavy duty power

for construction

Murphy Diesel Engines and Power Units for construction, 90 to 220 H.P. Generator Sets, 60 to 133 K.W.

This test "Hammers Home" the fact that...

Maintenance Costs Less



HIT IT HARD! *Marfak* won't splatter like ordinary grease — proof that heavy loads and rough roads won't hammer it out of spring shackles, tie rods and other chassis parts... proof that *Marfak* gives safer, longer-lasting protection with fewer applications.

Because Texaco Marfak won't assures longer

HAMMERING jolts . . . heavy loads . . . road splash — you can protect your chassis bearings against all of them by using *Texaco Marfak*. It's the world's most famous chassis lubricant. *Texaco Marfak* guards bearings against dirt, rust and wear for extra hundreds of miles . . . assures longer life for chassis parts . . . reduces maintenance costs.

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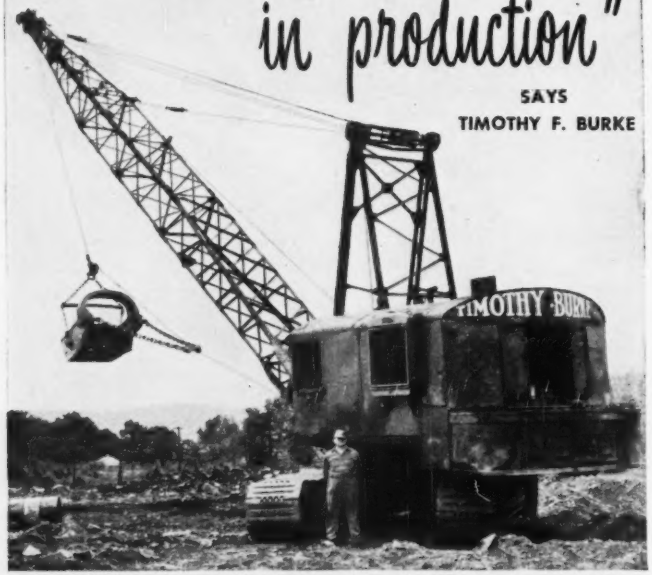
FOR ALL CONTRACTORS' EQUIPMENT

"a vast improvement in production"

SAYS

TIMOTHY F. BURKE

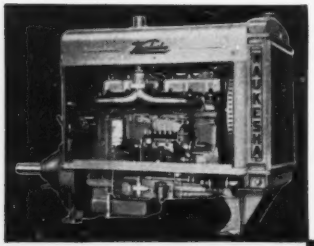


WAUKESHA

Diesel POWER

● Timothy Burke, Inc., of Scranton, Pa., have been excavating engineers for 67 years—in railroad and dam construction—and, for the past 32 years, coal stripping in the Anthracite region. Right now they're operating eighteen shovels and draglines. With their experience, they *know* a good engine when it comes on the job . . .

Here's what their Mr. Timothy F. Burke, Vice-Pres. and Gen. Mgr., says: "We installed a Model 148-DKU Waukesha Engine in our Northwest Model 85 Dragline to replace a gas engine (of another make) and we are very pleased with the performance . . . We have noted a vast improvement in production, and with regards to efficiency and economy, we can say the results have been very satisfactory." Easy to start, too, these Waukesha Diesels, and smooth . . . snappily responsive to all power and load demands.



Auto Gear & Parts Company, Inc., of Philadelphia, conversion specialists, supplied this Waukesha Diesel and installed it. Ask your distributor about Waukesha Diesels. Send for Bulletin 1414.

Model 148-DKU WAUKESHA DIESEL—Six cylinders, 5¼-in. x 6-in., 779 cu. in. displacement, 180 hp. maximum.

WAUKESHA MOTOR COMPANY

WAUKESHA, WISCONSIN

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NEWS BRIEFS

No Margin for Error—Arizona has completed installation of mileposts along 3,864 mi. of federal-aid and state-maintained highways. Manufactured of concrete with black painted numerals—by prison labor—they were installed by highway crews which kept errors under 25 ft. per mile. Posts are numbered higher as they run east and north from the westernmost or southernmost points on a road.

RFC Financing Wanted—Alabama's Gov. James Folsom wants the Reconstruction Finance Corp. to finance two toll roads crossing the state from north to south and from east to west. Folsom says he got the idea from a meeting of the Southern Governors' Conference, which adopted a resolution asking RFC financing for toll routes. Alabama's Bridge Commission is studying the proposal.

Pollution No Problem — Hanford's atomic energy plant on the Columbia River in eastern Washington offers no apparent water pollution problem, according to Director E. F. Eldridge of the Washington Pollution Control Commission. He also heads an advisory group established by the Atomic Energy Commission to safeguard the river from pollution. The group found atomic waste disposal a major problem —but that Hanford is doing everything possible to control it.

Grist for Celler Committee—Henry Kaiser says Seattle's Superior Portland Cement Co. aims to drive him out of Washington's cement business by a $1,650,000 suit it has filed against him. The suit asks damages for losses allegedly suffered during the period when Kaiser's Permanente Cement Co. operated the Diamond cement plant at Seattle. Superior, earlier this year, won a court action restoring the Diamond plant, after Permanente had bought it. Now, Superior says, it wants damages for the loss it suffered through Permanente's operation of the plant for two and one-half years of the peak postwar cement demand.

Turnpike Tangle Eased—Ohio's Highway Department may lend money to the state's turnpike commission for surveying a turnpike route, Attorney General H. S. Duffy has ruled. The State Board of Control would have to approve such a loan. Highway Director T. J. Kauer seeks a $600,000 loan for the survey. State Auditor J. T.

(*Continued on page 10*)

Now here is a tower!

HIGHER THAN THE WASHINGTON MONUMENT!

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WE ARE PROUD OF THIS TOWER BECAUSE THOUSANDS OF GALVANIZED ANCO STRUCTURAL RIB BOLTS WERE USED IN THE ERECTION.

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And this is only one of many construction jobs where Structural Rib Bolts with Anco Lock Nuts made the job easier. They are so easy to use that one man with a maul and wrench takes the place of a forge and riveting team, thus are *labor saving*. The only ribbed bolt on the market with National Coarse threads and the Anco lock nut, thus offers *exclusive safety advantages*.

Moreover they have unusual strength—tests show a ⅝" dia. bolt to be stronger than a ¾" dia. rivet They're approved for Federal, State and Private projects. Furnished black or galvanized. Shear and bearing values equal to hot driven rivets.

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760' Galvanized 4 Legged Self-supporting Tower.

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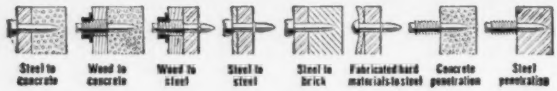

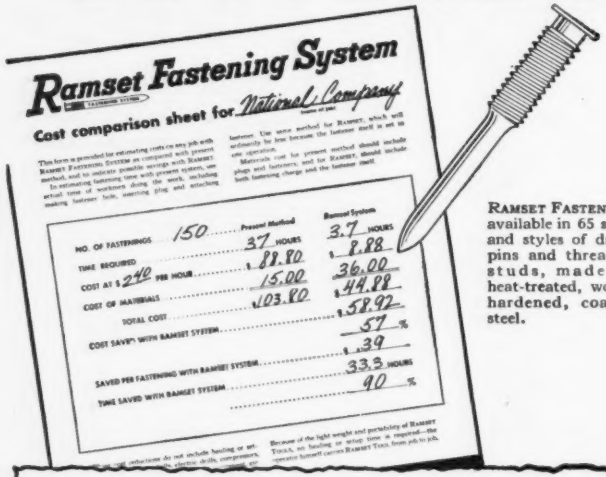
Ramset Fastening System

Cost comparison sheet for National Company

	Present Method	Ramset System
NO. OF FASTENINGS	150	
TIME REQUIRED	37 HOURS	3.7 HOURS
COST AT $ 2.40 PER HOUR	$ 88.80	$ 8.88
COST OF MATERIALS	15.00	36.00
TOTAL COST	$103.80	$ 44.88
COST SAVED WITH RAMSET SYSTEM		$ 58.92
		57 %
SAVED PER FASTENING WITH RAMSET SYSTEM		$ .39
TIME SAVED WITH RAMSET SYSTEM		33.3 HOURS
		90 %

RAMSET FASTENERS available in 65 sizes and styles of drive pins and threaded studs, made of heat-treated, work-hardened, coated steel.

FIGURE OUT FOR YOURSELF WHAT Ramset CAN SAVE!

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Select any job of fastening or anchoring into steel, concrete, masonry or other materials as shown above. Then, use RAMSET's free Cost Comparison Sheet to compare slow, laborious, costly chipping and plugging, drilling and tapping with the amazingly fast, simple, economical RAMSET FASTENING SYSTEM.

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Stemco Corporation, Cleveland 16, Ohio.

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YOU CAN FASTEN FASTER, EASIER, AT LESS COST WITH Ramset FASTENING SYSTEM

(*Continued from page 8*)

Ferguson has said he considers such a loan illegal. He may refuse to honor such a draft until the turnpike act's constitutionality is determined.

Deepwater Port for Richmond?—Forty-seven shippers say they'd save a total of $1,600,000 annually if Virginia's James River is deepened to 35 ft. from Richmond to the sea. Survey is being taken by Richmond's Chamber of Commerce for the benefit of the Army Engineers, who are studying the proposal to add 10 ft. to the channel's depth. Savings would come from elimination of handling freight between vessels at Hampton Roads.

Weather-Building Research Pushed—National Research Council's Building Research Advisory Board will hold its first research correlation conference at Washington Jan. 11-12. It will deal with weather's effect on building and will intermingle building researchers with scientists of other fields. The hope is that construction requirements for weather data will be defined clearly. Interested parties should communicate with William H. Scheick, BRAB, National Research Council, 2101 Constitution Ave., Washington.

Kentucky Mapping Urged—A five-year, $3,320,000 plan for completing a topographical-map survey of Kentucky has been advanced by the state Chamber of Commerce. Begun two years ago, the survey is about 10 percent completed. State aid is sought to match federal grants for the remainder of the job. Overall cost is estimated at about $7,360,000.

Let's Have the Dough—Montana's Attorney General A. H. Olsen will ask a court order to free $325,000 allocated for a geophysics building at the Montana School of Mines. The money is tied up by a legal dispute between the state board of education and the state board of examiners, a group which passes upon state contracts. But there's no argument over the $325,000 allocation, even though the remainder of the $5,000,000 building fund is disputed.

Access Roads Expensive—It'll cost $1,800,000 to build an adequate system of access roads for the Washburn Tunnel under the Ship Channel between Pasadena and Galena Park, near Houston, Texas. That's the finding of an engineering firm, Palmer and Baker, which surveyed the problem. Initial anticipated traffic load is expected to be 10,000 cars daily when the tunnel is opened early next year.

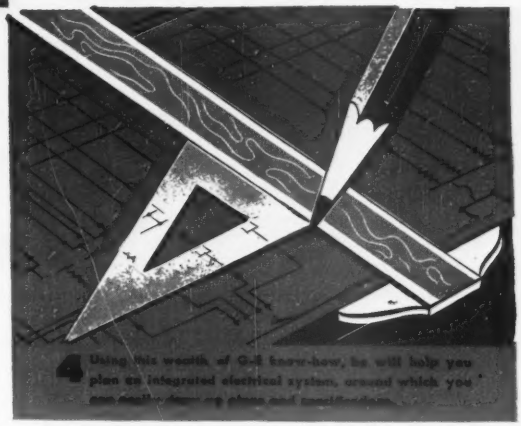
(*Continued on page 12*)

How building designers can get an **electrical layout that fits** ...and save time and money doing it!

1 Before your draftsman lays pencil to paper, call, wire or write your nearest General Electric Office; an experienced building specialist will contact you.

2 Obtain his help in developing preliminary plans and preliminary sketches showing the type and location of all electrical facilities essential equipment which must be used.

3 At his disposal are many General Electric product engineers . . . authorities in the fields of power distribution, lighting, motors and control.



4 Using this wealth of G-E know-how, he will help you plan an integrated electrical system, around which you can easily draw up plans and specifications.

RESULTS: You save planning time and come up with electrical plans that fit your structure . . . plans that embody all up-to-the-minute electrical developments . . . specifications that assure the building owner maximum operating economies over the years, and establish your reputation for future jobs. Try this easy, 4-step planning method on your next job . . . you'll find it both profitable and enjoyable to work with a General Electric building specialist. ***Apparatus Dept., General Electric, Schenectady, N. Y.***

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SELF ALIGNING PIPE COUPLINGS
VICTAULIC
EFFICIENT FULL-FLOW FITTINGS

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(*Continued from page 10*)

Canal Coming Up—St. Louis will have the only industrial canal on the Mississippi River when the 8.4-mi. Chain of Rocks waterway is completed late in the summer of 1951, according to Col. E. R. Smyser, Jr., district engineer. Construction is about two-thirds done on two large locks now, and digging of the canal has begun. The area is expected to see much industrial expansion when the canal is complete.

Wanted: A Land Policy—The Soil Conservation Society of America says Congress should undertake quickly an inventory of U. S. land and water resources—then adopt a policy on their development and use.

THE COVER

"The Colonel's in a wonderful mood. He's been raising hell ever since he came in this morning."

That's the way the men in New York City's ever-busy Board of Transportation office describe their commissioner, Sidney Hedley Bingham.

The energetic 55-year-old Colonel came up the hard way—having started with the Board in 1915 as a surveyor and working up to chief engineer. When Mayor William O'Dwyer appointed him Commissioner in 1945, it was the first time that this important post had been filled with a man from the ranks.

Col. Bingham has a record studded with accomplishments as both a civil and military engineer, including a long list of inventions and improved designs of transportation and military facilities. At the outbreak of World War II, he was commissioned to serve in the Military Railway Service of the Transportation Corps of the United States Army. Possibly his greatest military development was the "breathing bridge" that made it possible to land equipment around the clock despite the 28-ft. tides at the Normandy beachhead.

While engaged in the operation of one of the largest transit systems in the world (42,000 employees, 7,900,000 passengers daily), Bingham has lately been active as a consultant in the study and planning of transit and traffic improvements. His most ambitious undertaking at the moment is acting as consultant to the city of Stockholm, Sweden, in its present subway construction and surface rehabilitation program.

Bingham is now a licensed Professional Engineer of the State of New York, a member of the American Society of Mechanical Engineers, and of the Institution of Mechanical Engineers of Great Britain. He holds an E. E. degree from Columbia University.

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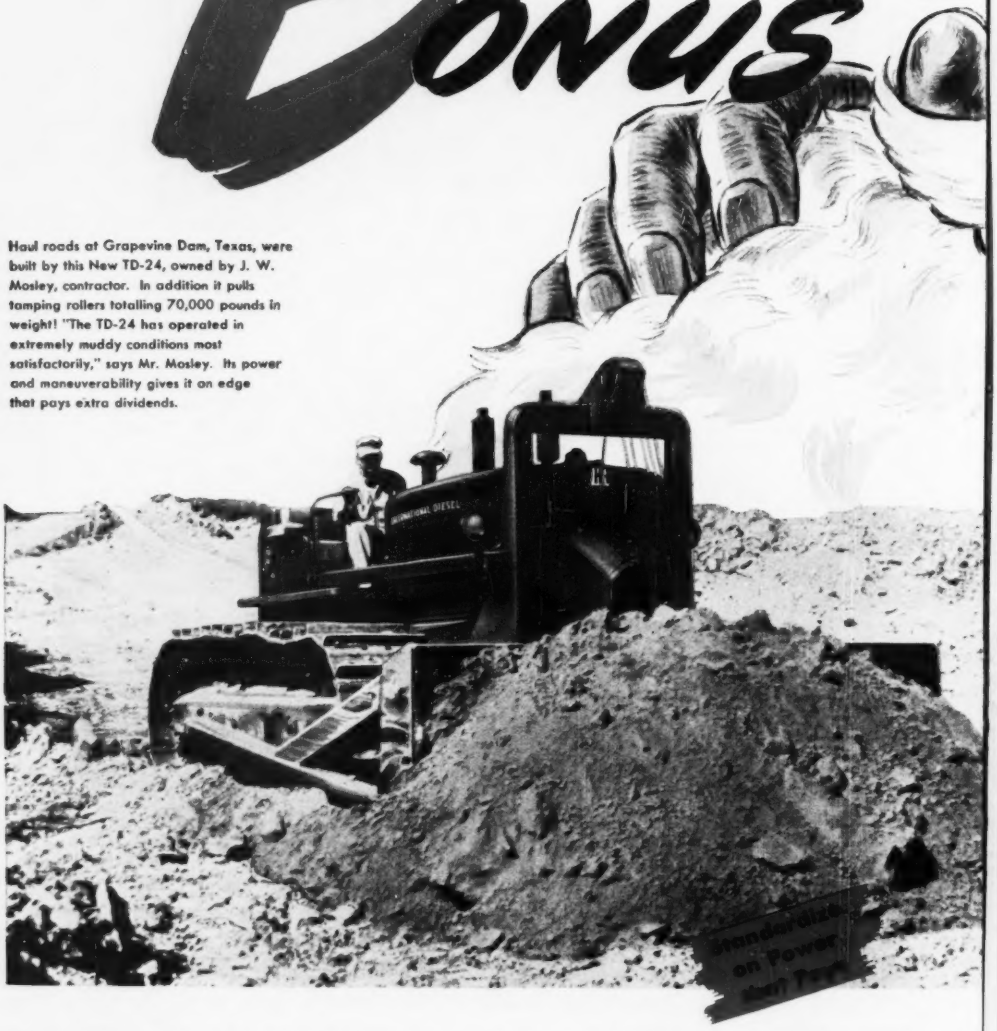
BONUS

Haul roads at Grapevine Dam, Texas, were built by this New TD-24, owned by J. W. Mosley, contractor. In addition it pulls tamping rollers totalling 70,000 pounds in weight! "The TD-24 has operated in extremely muddy conditions most satisfactorily," says Mr. Mosley. Its power and maneuverability gives it an edge that pays extra dividends.



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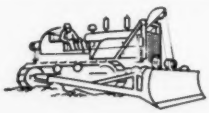

Extra profits are yours whenever the New International TD-24 diesel crawler takes on your heavy earthmoving jobs. By reducing your operating costs while increasing your payload production, the TD-24 actually hands you a bonus every working day!

No other crawler can match the TD-24 in work capacity.

Quick starting, *on-the-go gear shifting*, instant high-low range speed changes, *eight speeds to 7.8 m.p.h. in each direction of travel*, and turns with power on both tracks are a few of the exclusive operating features which make the TD-24 your big bonus producer.

With its 140 drawbar horsepower, matchless maneuverability, and wide range of speeds at your finger tips, the New TD-24 is certainly the tractor you want. Thoroughly field-tested and job-proved, the New TD-24 is now available at your International Industrial Power Distributor's plant.

INTERNATIONAL HARVESTER COMPANY • CHICAGO

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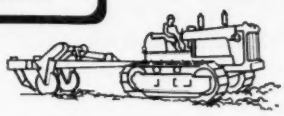
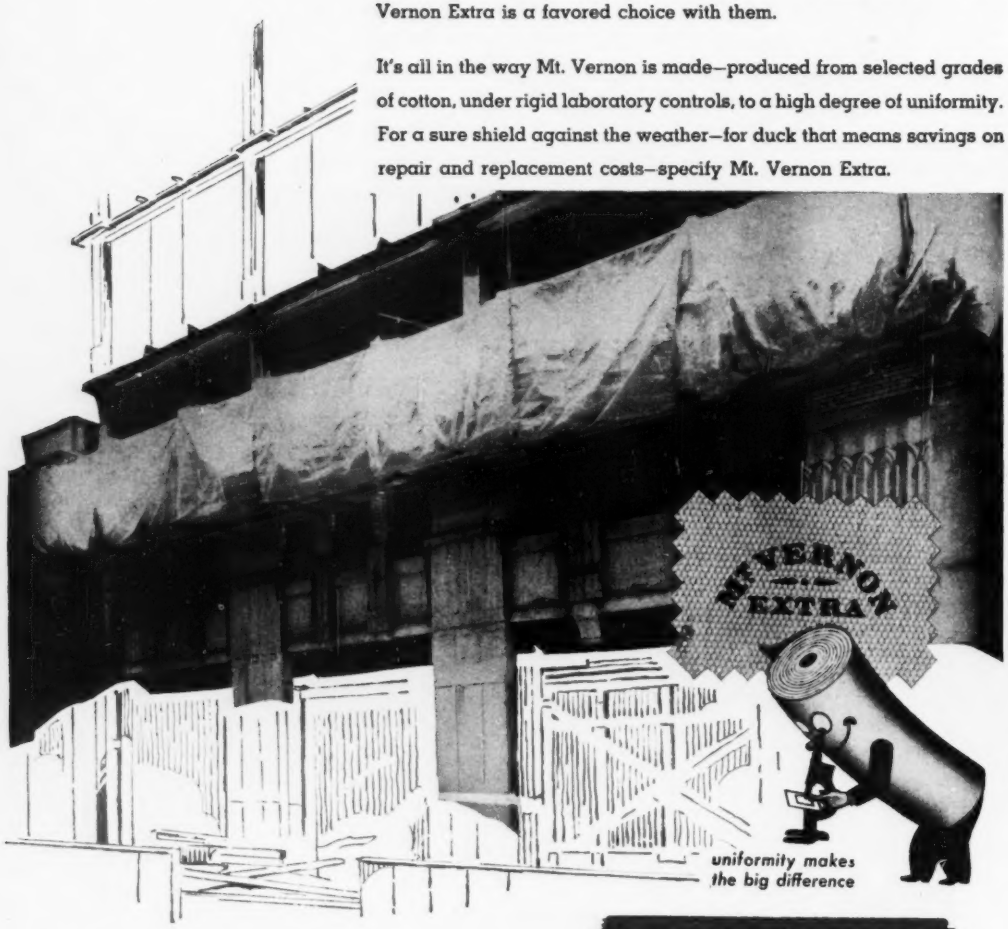


Rough Service Needs Tough Tarps

Service conditions in the construction industry are *really* rough. That's why men who specify tarps look for duck that can stand up to the beating of daily use and still deliver top protection. And that's why Mt. Vernon Extra is a favored choice with them.

It's all in the way Mt. Vernon is made—produced from selected grades of cotton, under rigid laboratory controls, to a high degree of uniformity. For a sure shield against the weather—for duck that means savings on repair and replacement costs—specify Mt. Vernon Extra.



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It's the Easiest Saw to Handle

It weighs only 33 lbs. complete . . . and is perfectly balanced. It cuts at any angle. Handles any type of cut. And flips . . . in two seconds flat . . . from vertical to horizontal cutting position. What's more, its two simple controls are easily operated by either left or right hand in a normal comfortable position. Yes, and its low vibration plus a spiked bumper plate that permits protection of saw and holds guide bar straight on even the heaviest cuts reduce operator fatigue to nil. Look into this saw now. Write for new illustrated bulletin.

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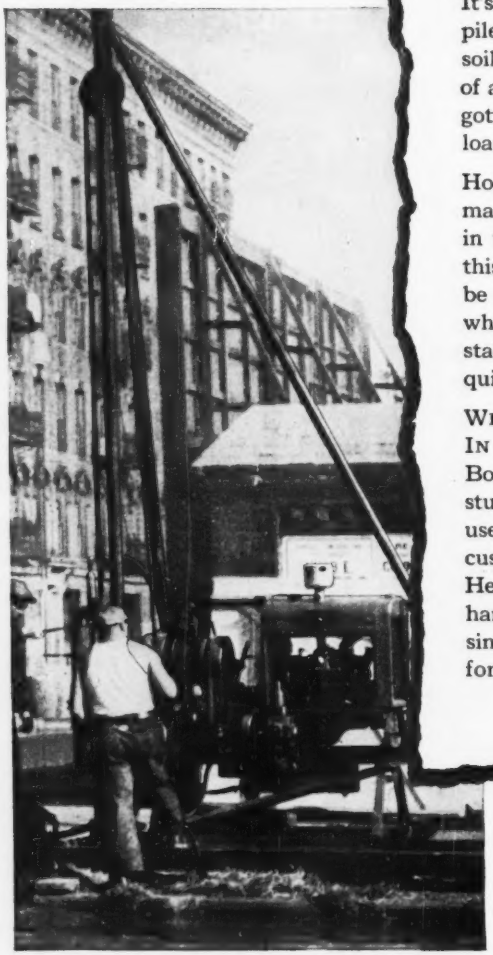
THE PILES SUPPORT THE STRUCTURE...

But What Supports the Piles?



It's the soil that actually bears the load, not the piles. The piles simply transfer the load to the soil. So it isn't just a matter of installing piles of a given depth and a given diameter. You've got to make sure that the soil can carry the load the piles will transfer to it.

How? Soil Borings are the answer. Borings are made at various points and samples of the soil in the successive strata are examined. From this analysis, the bearing value of the soil can be forecast with reasonable accuracy. Then, when the indicated type of pile is properly installed, it will have the carrying capacity required.

WESTERN, in cooperation with the DRILLED-IN CAISSON CORP., is prepared to make Soil Borings and also comprehensive engineering studies of the results. We recommend that you use our FREE CONSULTATION SERVICE. Discuss your problems with one of our engineers. He speaks with authority, for WESTERN has handled every type of foundation problem since 1924 . . . without a single failure. Send for Catalog A.

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THE CONSTRUCTION WEEK

NO CAUSE OF DEATH—Many Long Beach and west coast civic interests are inclined to blame the high cost of protecting against ground subsidence (ENR June 16, p. 11) for the mothballing of the Long Beach Naval Shipyard. But insiders know that wasn't the reason. Although the yard is due to be de-activated next June 30, the protective works will be built anyhow. Real cause is this: The Navy can't support five West Coast shipyards on its present shrunken budget. In a last-ditch effort to keep the yard open, Long Beach staged a "funeral" for the shipyard Nov. 12.

WIND DISTRICT—The Air Force's new Air Engineering Development Center (ENR Nov. 17, p. 25) —to be built at Camp Forrest, Tenn., and to consist of wind tunnels and testing equipment for air weapons—has caused establishment of a new Army Engineer district. The new district will be known as the Tullahoma (Tenn.) district. It will act as the construction base of the new center, contracting for housing and similar work.

KNOW HOW FOR PERU—E. W. James, Bureau of Public Roads engineer now in Peru, will return to the U. S. this month to pick up a staff of specialists. The object: A full-dress study of road transport in the country of the Incas, and recommendations for a long-range improvement program. James' mission was undertaken at the request of the Peruvian government.

RADIOACTIVE SNOW GAGE—The U. S. Weather Bureau and the Corps of Engineers are developing a device that uses radio isotopes to measure the water equivalent of a snow pack. Strength of a signal picked up by a Geiger-Muller tube suspended above an isotope sample gives the water depth equivalent. This figure is transmitted by radio to a central measuring station. This will permit daily measurement of snow accumulation or melt by remote control from many points, and should ease and improve run-off prediction.

OVERSEAS POWER MONEY—The World Bank this month will make loans to three countries for power projects: $25,000,000 to India for a steam plant at Bokar; $15-$30,000,000 to Uruguay for hydro work; and $12,500,000 to El Salvador, also for hydro.

IF AT FIRST YOU DON'T SUCCEED—The Southwestern Power Administration—headquaring at Tulsa, Okla.—got some funds for limited power line construction only after heated Congressional debate this year. But it now appears SPA might get more than 800 miles of transmission line—built with Rural Electrification Administration money. REA announced that the greater part of more than $15,000,000 in loans will finance lines from two new federal dams in northern Arkansas (Bull Shoals and Norfork). The lines will be operated under lease by SPA, which will have the privilege of buying them on amortization.

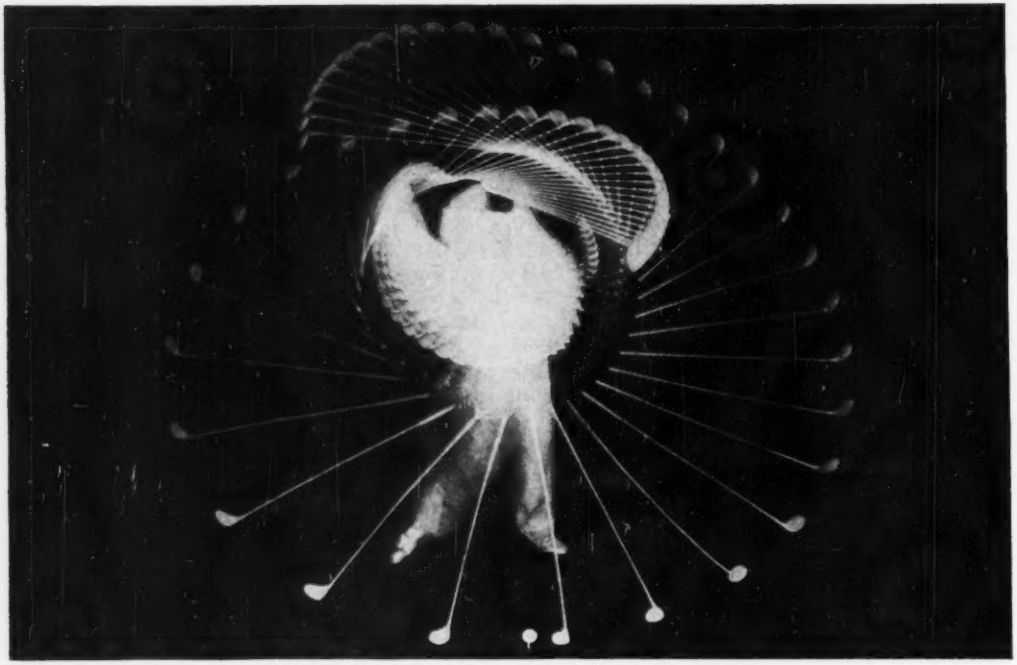
ATOM ACTION—That $2,500,000 construction contract (to Bechtel Corp , San Francisco) at the Atomic Energy Commission's vast new Arco, Idaho, reactor station, is a beginning on a huge AEC construction program. Other work now in planning stages includes: $25-40,000,000 for experimental atomic-electric power (with heat from a reactor) at Knolls laboratory near Schenectady, N. Y.; a $25,000,000 testing station for development of marine propulsion devices using atomic energy. Bechtel's contract at Arco is only the beginning of work at the 173,000-acre Idaho site; AEC figures it'll be employing 2,000 construction workers at Arco by the end of 1950. The site was chosen for the security it offers.

UNDER SECRETARY CHOICES—Interior's two top assistant secretaries—C. Girard Davidson and William E. Warne—are also top candidates for the newly-vacated post of Under Secretary. Washingtonians think Davidson has an inside track. Davidson is an attorney. Warne a newspaperman turned "bureaucrat," protege of Reclamation Commissioner Michael Strauss.

MORE HELP—The Interior Department also has another set of irons in the appointive fire at the moment—an expected request by President Truman for an increase in the number of assistant secretaries from two to four. The change would make it easier for new Secretary Oscar Chapman to carry out his plan of placing assistants in charge of specific functions: Administration, water and power, minerals and land. Under former secretary Krug, the assistant secretaries were responsible for geographic areas.

POLLUTION SHUFFLE—Budget limitations forced the United States Public Health Service's Water Pollution Control Division to organize only 10 river basin areas this fiscal year instead of the 14 which had been planned originally. Now USPHS has found the temporary apportionment has worked out so well that its officials are considering modification of the original scheme. To do so, however, would require some adjustment of present area assignments.

There's a **PATTERN OF PERFECTION** *in Chlorination too*



High-Speed photograph Courtesy of A. G. Spalding & Bros., Inc.

The champion's swing is a pattern of perfection, born of experience, practice and skill. The pattern of perfection in chlorination—proven ability to effectively solve chlorination's multitudinous problems —stems from the same background. W&T brings such a background to your job.

Whether you need chlorination for a drinking water supply, sewage treatment, a swimming pool or for industrial process and cooling water, you'll find that when you demand W&T equipment, you'll have all the ingredients for perfection—

EXPERIENCE gained through 35 years of research, development and pioneering—

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Call for the PATTERN OF PERFECTION on your next chlorination job—it's as close as your W&T Representative.

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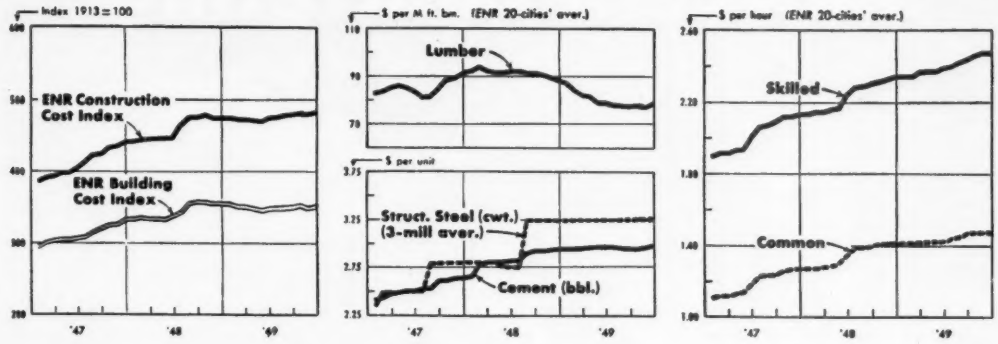
S-46

DECEMBER CONSTRUCTION BUSINESS REPORT



ENR INDEXES (1913 = 100)	Dec. '49	Nov. '49	% Change	Dec. '48	% Change
Construction Cost	480.32	480.02	+0.1	477.66	+ 0.6
Building Cost	353.07	352.77	+0.1	355.55	− 0.7
MATERIAL PRICES (20-cities' average)					
Cement, bulk, per bbl	2.957	2.950	+0.2	2.960	− 0.1
Structural Steel, (3-mill aver.), per cwt	3.250	3.250	0.0	3.250	− 0.0
Sand, per ton	1.965	1.952	+0.6	1.977	− 0.6
Lumber, 2x4 Fir, per M ft. bm	85.029	84.897	+0.2	95.609	−11.0
Lumber, 2x4 Pine, M ft. bm	75.233	75.050	+0.2	82.816	− 9.1
Common brick, per M	27.763	27.763	0.0	27.338	+ 1.5
Ready-mixed concrete, per c. y	10.335	10.337	+0.2	10.207	+ 1.4
Structural Clay Tile, 3x12x12 Per M	131.755	131.755	0.0	128.402	+ 2.6
WAGE RATES (20-cities' average)					
Common	1.478	1.478	0.0	1.413	+ 4.6
Skilled (aver. 3 trades)	2.462	2.462	0.0	2.347	+ 4.8
Bricklayers	2.721	2.721	0.0	2.554	+ 6.5
Structural Ironworkers	2.426	2.426	0.0	2.332	+ 4.0
Carpenters	2.242	2.242	0.0	2.177	+ 2.9

	November			Eleven Months		
	1949 (4-weeks)	1948 (4-weeks)	% Change†	1949 (47-weeks)	1948 (48-weeks)	% Change†
CONTRACTS AWARDED (thous.)						
Total U. S. (ENR reported)	$589,224	$451,112	+31	$7,293,842	$6,375,843	+17
Private	312,227	208,441	+50	3,481,805	3,075,545	+16
Public	276,997	242,671	+14	3,812,037	3,300,298	+18
Federal	41,774	54,195	−23	929,670	879,485	+ 8
ENR Constr. Volume Index, '13 = 100	265	203	+31	280	250	+12
NEW CONSTRUCTION CAPITAL						
Total	304,787	528,814	−42	6,922,660	5,945,015	+19
State & Municipal Bond Sales	218,258	297,846	−27	2,728,198	1,838,328	+52
Corporate Security Sales	86,529	230,968	−63	2,061,238	2,055,466	+ 2
Federal (non-federal work)	.....	.....	....	385,000	492,289	−22
Federal (federal work)	.....	.....	....	1,748,224	1,558,932	+12

MATERIAL SHIPMENTS & LABOR SUPPLY	October (O) September (S) 1949	1948	% Change	Ten Months (10) Nine Months (9) 1949	1948	% Change
Cement, thous. bbls., Bu. of Mines	22,778(S)	19,938(S)	+14	156,032(9)	153,154(9)	+ 2
Fabr. Struc. Steel, thous. tons, AISC	95(O)	164(O)	−42	1,596(10)	1,642(10)	− 3
Lumber, mil. ft. bm., NLMA	2,951(S)	3,074(S)	− 4	22,885(9)	27,211(9)	−16
Lumber Prod., mil. ft. bm., NLMA	2,874(S)	3,340(S)	−14	23,294(9)	27,996(9)	−17
Contract Const. Employ., thous. BLS	2,321(O)	2,334(O)	− 0.5	Av. 2,152(10)	Av. 2,149(10)	+0.1

†Computed on weekly average basis.

Sub-Zero Concreting!

ECONOMICAL 'INCOR' WINTER SCHEDULES SPEED CONSTRUCTION OF 'NYTAL'S WELL-DESIGNED TALC MILL AND MINE SHAFT

Dependable 'Incor' high early strength cut heat-protection costs, maintained economical schedules, in concreting 'Nytal' talc plant—buildings, silos, mine shaft. Neat-line excavation of shaft is 8'4" x 14'5", inside concrete lines 6'4" x 12'5", providing a 12" lining—depth, 600 ft.

OUTSTANDING alike for quality construction and quality production, the new plant of GOUVERNEUR TALC COMPANY, INC., at Balmat, N. Y., is a dependable source of talc supply for paint, paper, rubber, ceramic and other industries—rated capacity 60,000 tons a year.

Buildings and silos are well designed and staunchly built, and the 600-ft. mine shaft of strong, durable concrete gives access to well-engineered sub-surface operations. Much of the construction work was done last winter, and 'INCOR'* 24-HOUR CEMENT helped maintain economical schedules.

The mine shaft's 12-inch lining was concreted on a weekly cycle: Drilling, blasting, excavating and setting forms Monday through Saturday morning . . . concreting Saturday afternoon, average pour 24 ft. . . . stripping Sunday P.M. Water and aggregates heated . . . concrete averaged 60-70 degrees when placed . . . work went ahead steadily, with outside air temperatures as low as 38° below zero.

Quality concrete throughout, even under adverse conditions.

*Reg. U. S. Pat. Off.

Owner: **GOUVERNEUR TALC COMPANY, INC.,** Balmat, N. Y.
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Contractor, Buildings & Silos: **JAMES STEWART & CO., INC.,** N.Y.
Consulting Engineers: **STROBEL & SALZMAN,** New York
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LONE STAR PORTLAND CEMENT
'INCOR' HIGH EARLY STRENGTH PORTLAND CEMENT
LONE STAR AIR-ENTRAINING PORTLAND CEMENT
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LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 15 MODERN MILLS, 27,500,000 BARRELS ANNUAL CAPACITY

Stepping Up the Road Program

CONGRESS is to be asked to increase federal aid for highway construction to almost double the current amount of $450,000,000 a year. It also is to be asked to pay 75 per cent instead of the current 50 per cent of the cost of work on the 40,000-mile interstate network, on the grounds that these roads are essential to national defense.

This decision was reached at a special meeting of the American Association of State Highway Officials in Chicago (ENR Dec. 1, p.13) at which representatives of 45 of the 48 state highway departments were present.

Decision to ask for an increase only on the relatively small interstate network is sound. In the first place federal interest in early completion of that strategic system is greater than in other highways. Also, state highway officials are finding it increasingly difficult to convince rural members of their state legislatures that a larger portion of state funds should be devoted to the interstate network. Under the 75-25 division now proposed, less state money will be required.

And high commendation is due the AASHO for its decision to stand by the 50-50 division of costs on all other federal-aid roads. Any request for an increase in federal aid for these roads can only weaken efforts to get the federal government to eliminate its emergency excise taxes on automotive transportation.

That the time has come to ask for an increase in total federal aid is so obvious as hardly to need argument. The highway departments have succeeded in building up their rate of production to the point where most of them could take on considerably more work by the time the expanded program would start in July, 1951. Also, the federal government now taxes highway users more than it pays out in federal aid. If the all-too-apparent deficiencies in our highway system are to be made up, that tax money should be put back into highway construction as rapidly as possible.

Waterworks Men Agree

THE CHALLENGE—to pursue more aggressive business methods in developing supplies and in promoting sale of water—as set forth in Mr. Gannett's article (ENR, Nov. 24, p.39) has been greeted with more than expected approval (p. 34). Taken as a whole, the reactions promise well for the future—they indicate that waterworks managers are not only thinking about better-business objectives, they are, in many cases, putting the principles into effect.

There seems to be no question about metering of consumption. All agree that it is desirable, but hesitate at the political hurdles. Actually the situation presents an opportunity for waterworks men to do some of the real merchandising of water that is called for. There can be no doubt but that a carefully planned, effectively executed campaign of water-loss and water-cost education could bring about the acceptability of metering, and thus contribute substantially to reducing water shortage in many places.

Another aid to waterworks improvement would come from a simplification of the legal restrictions that govern operation of this type of municipal monopoly. Less red tape always works in the direction of efficiency and economy.

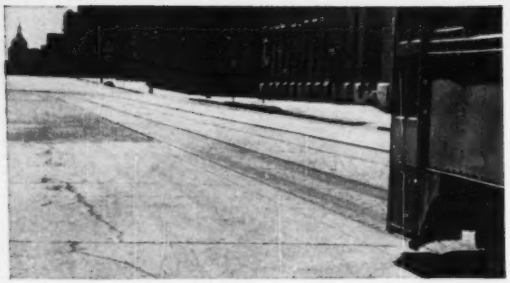
Mr. Gannett's article and the comment that it stimulated boils down to this: The water-shortage problem across the country can be solved. The men with the knowhow stand ready to do the job. They will have to step out of their technical cubicles and enter the political arena to get what they need. And they deserve more freedom from legal red tape.

Keep Out!

WHEN A PROBLEM becomes serious enough a solution is always found. Never was proof of this adage more eagerly awaited than in its application to the sluggish mess of motor vehicles that creeps through the business district of almost any city one cares to mention.

Perhaps there is a ray of hope in developments that may be cited in cities as far apart as Paris and New York. The French authorities have announced that henceforth no trucks of 5-ton size or larger may enter or cross the central business district of the capital city between the hours of 2 and 7 p.m. And New York, embracing the same philosophy on a more permanent and grandiose scale, has decreed that all suburban buses and common carrier trucks must stop short of its congested core. A month ago the Port of New York Authority opened its union motor truck terminal near the exit of the Holland Tunnel. Construction is actively underway on a mammoth bus terminal adjacent to the Lincoln Tunnel exit (ENR Dec. 1, 1949). And at the exit of its new Battery Tunnel, the Triborough Bridge and Tunnel Authority is building a 1,000-car garage.

All of these developments have one thing in common—they will eliminate a large volume of traffic from the congested business districts of the cities. They are in effect "Keep Out" signs, and thus mark a distinct change from the "directional-sign" philosophy that attempts to channel and move all the traffic that presents itself. Drastic, even desperate, though such a philosophy be, it or something akin to it cannot much longer be avoided. Traffic congestion is serious enough to demand a solution, however heroic and painful the steps may prove to be.

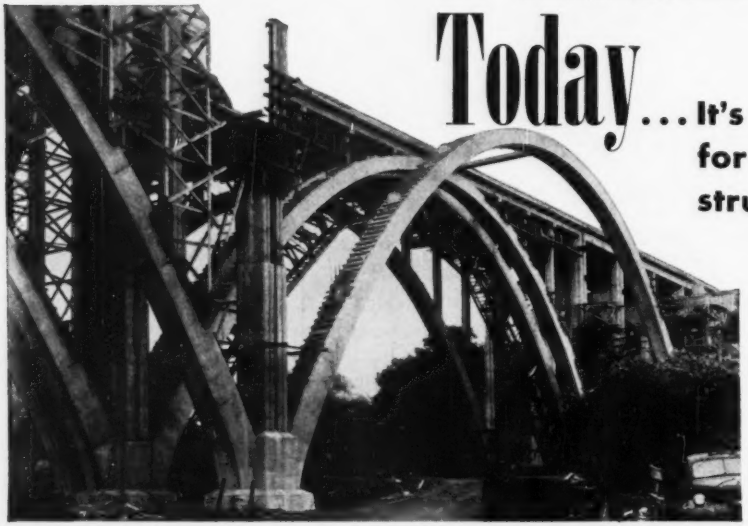


Ten Years Ago...

A Decade of ATLAS DURAPLASTIC AIR-ENTRAINING PORTLAND CEMENT

in August, 1939, this concrete test paving was laid in Second Avenue North, Minneapolis. The badly scaled section of roadway in the background was made with regular portland cement. The foreground section, *laid at the same time*, was made with Atlas Duraplastic—the first commercial use of the air-entraining portland cement originated and developed by Universal Atlas.

Both sections, subjected to the severity of ten Minneapolis winters and to heavy applications of de-icing salts, are shown just as they appeared in July, 1949—convincing proof of the characteristic durability of Duraplastic concrete, of its high resistance to freezing-thawing weather and the scaling action of de-icing salts. Longitudinal structural crack shows some ravelling. Note perfect transverse joint.



Today... It's DURAPLASTIC* for more durable structures

Photo taken during construction of three-span bridge on Penn-Lincoln Highway. Spans for bridge and paving and underpasses made with Atlas Duraplastic. Designed by Pennsylvania Dept. of Highways. Contractor: Dinardo, Inc., Pittsburgh, Pa.

From the first paving test installation to this tremendous three-span bridge, Atlas Duraplastic air-entraining portland cement has demonstrated both its added durability in countless paving jobs and its improved appearance in structural uses.

In its rapid ten-year growth, Duraplastic's advantages have been applied to all types of mass and structural concrete — for foundations, walls, columns, and floors. It's ideal for slip-form, gunite, stucco and similar uses.

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For structural concrete needs of today and tomorrow, Duraplastic offers *better concrete at no extra cost.* It provides the precise amount of air-entraining agent interground with the cement for satisfactory field performance. It complies with ASTM and Federal Specifications, sells at the same price as regular cement and calls for no unusual changes in procedure. For further information write to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N. Y.

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ENR-D-97

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ENGINEERING NEWS-RECORD

DECEMBER 8, 1949 VOL. 143 NO. 23

Liberia Co. future in doubt, development plan stalled

Program sponsored by Edward Stettinius runs afoul of management troubles—Assets are few, exclusive development franchise being exploited by others

Nat McKitterick and Seabrook Hull
Washington Staff

Development of backward countries is no business for amateurs. That hard lesson was brought home to one-time Secretary of State Edward Stettinius just before he died. Stettinius' vaunted Liberia Co. is at least dormant, if not flat broke.

Liberia Co. was billed as just about the model mechanism for enticing U. S. capital to work overseas (ENR April 29, 1948, vol. p. 615). The company's first job was to be that of a promoter—granting concessions to "eager" U. S. investors, and Stettinius hoped to go into development work on his own. He had visions of road networks, railroads, power projects, sanitation facilities for the little territory under the western bulge of Africa.

Today, two years after Liberia Co. came into being, about the only assets left are: (1) a 200-acre cocoa plantation, planted by the U. S. government, which may start bearing in five years; and (2) minority interests in a cold-storage plant in Monrovia, Liberia's capital.

Picking up the pieces

This week, Liberia Co. President Allen Morton, one of the original investors, is in Liberia trying to salvage what he can. Pan American Airways' Juan Trippe who, as Stettinius' brother-in-law, put some $15,000 into the organization, is canvassing companies in this country trying to get some help; he'll be going to Liberia too, soon. And Rudolph Hecht, president of the Delta Line, New Orleans, is in Liberia offering his services, too.

Perhaps Liberia Co. will revive. But its record so far is an example of what not to do when investing abroad.

Stettinius' first pitfall was overestimating Liberia's possibilities. In April, 1948, ENR wrote:

"Filled with enthusiasm, Stettinius said that engineering surveys had revealed resources in Liberia were far greater than the most optimistic guess."

Stettinius counted on his enthusiasm to attract $10-million in private U. S. investments over the first few years.

But enthusiasm alone won't get many businessmen to open their checkbooks. When Stettinius talked of oil, businessmen asked for proof. There wasn't any. In fact, as far as geologists know now, there isn't any oil in Liberia.

When Stettinius talked of timber, one businessman went over to see. He found that a greatly improved transportation network would have to be built before timber operations would be profitable.

Stettinius did get a taker when he talked of iron ore. New Yorker Lansdell K. Christie, president of the Liberia Mining Co., Ltd., had already spent a million or so surveying the rich, iron-bearing Bomi hills, 50 miles northwest of Monrovia (Christie got some help from Dutch exploration records which the U. S. government got hold of in 1944). Christie's survey disclosed a proven reserve of 20-million tons of ore in the Bomi region.

Export-Import Bank interested

Christie needed capital badly. The Export-Import Bank thought his venture a good risk, providing private capital would go at least halves. So Christie let the Liberia Co. buy into his operation for $250,000 providing Stettinius would scrape up the capital.

Liberia Co. couldn't deliver. Christie finally got the money from Republic Steel, which now owns a sizable share of Liberia Mining. That was enough to convince Ex-Im Bank, which came across with a $3-million loan. The loan with some $4-million odd more—largely from Republic

(Continued on page 32)

MID-RIVER INDUSTRY—An ancient Memphis dream—a large industrial site and sheltered harbor—is being developed on President's Island, off Memphis' down-town area (ENR April 14, p. 70). Dredge taking sand and silt from river bottom is shown at right, maintenance barges at left. Winding back at left is the pipeline through which fill is moved to the site. (Wide World Photo.)

Floods ravage Northwest

HIGHWAYS, RAILROADS SUFFER—The heaviest rainfall in 20 years sent Pacific Northwest rivers over their banks late in November in a flood which hit hardest in Northern Washington and British Columbia. In Washington's Skagit valley, five towns were isolated, with considerable damage to highways there and on Olympic Peninsula. Ross Dam, of Seattle City Light system, averted a disaster there by holding back 116,000 acre-ft. At Vancouver, it was estimated 10 major highway and rail bridges went out, with both major rail lines cut. West Vancouver was isolated (top above) when a 38-ft. span and a 100-ft. approach to a bridge were washed out. Army engineers worked all night to install a 52-ton Bailey Bridge span. (bottom above). Both Canadian Pacific and Canadian National mainline tracks were blocked by nine and five rock slides respectively. Trestles on both lines needed repairs, also. The Trans-Canada highway and newly-opened Hope-Princeton road were blocked, the former by a 100-ft. long, 30-ft. deep washout near where the Canadian Pacific was cut by a 200-ft. washout. In Washington, the Great Northern's main-line (below) also was washed out near Mt. Vernon. Considerable damage was done power and telephone lines. (Wide World Photo below).

Good earthfill rate seen for East at Neversink

S. A. Healy Company has placed up to 38,300 cu. yd. of rolled earth per 16-hr. day and averaged 25,000 cu. yd. daily during the dry May-to-November construction season just finished on Neversink Dam. It's one of three earthfill dams the Board of Water Supply has under way on New York City's Delaware system.

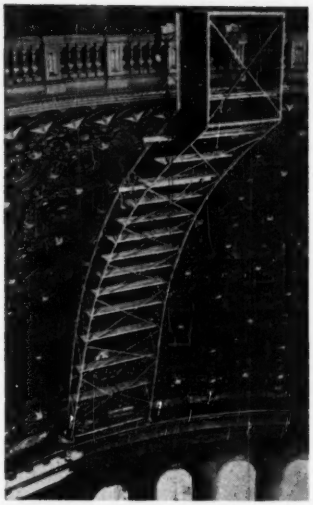
Favored by good construction weather and profiting by prior experience on Merriman Dam, the contractor dug, hauled, processed, placed and rolled 3,405,900 cu. yd. of earth at Neversink this year, working two 8-hr. shifts, six days a week.

Healy did Merriman Dam's embankment, starting in 1946; his contract on Neversink was awarded in May, 1948. Now, the Board of Water Supply is about to advertise for bids on the embankment at Downsville—third of the three 200-ft. high earth dams (for details of construction see ENR Jan. 6, 1949, p. 60).

During 1948, initial construction season at Neversink, the contractor began July 26 and placed 317,100 cu. yd.—filling the excavation made for the concrete cutoff wall. Through 1949's 6½-month construction season, all work has been above original ground level. Earth is placed in 7-in. layers and compacted by 14 passes of a single sheepsfoot roller in the impervious core; an 8-in. layer gets eight passes in the embankment's outer shell.

Month-by-month the earthfill progress at Neversink was this in 1949: May, 66,800 cu. yd.; June, 199,100 cu. yd.; July, 490,500 cu. yd.; August, 720,100 cu. yd.; September, 656,400 cu. yd.; October, 533,000 cu. yd.; and November, 740,000 cu. yd. In each case except May, the month named comprises the monthly estimate period extending from the twentieth day of the previous month to the nineteenth day of the month named.

New Highway Hazard—Atomic Energy Commission is being pushed to build a by-pass around Santa Fe, N. M., on a right-of-way the state would provide. That's the result of an accident involving an AEC convoy and a runaway lumber truck. The prompt appearance, after the crash, of crews from Los Alamos, garbed in rubber suits and carrying Geiger (radiation) counters led people to speculate that the accident scene, including a school and county courthouse, might have had to be scaled off. The proposed by-pass would cost about $6,000,000, which the state says it can't pay.



HANGING SCAFFOLD—Designed especially for the national capitol dome, this aluminum scaffold will enable workmen to wash and paint the dome ribs of the rotunda. Two workmen are shown here adjusting the 51-ft. scaffold after it was hoisted into place. (Wide World Photo.)

Seattle approves work for Gorge powerhouse

The Seattle, Wash., Municipal Board of Public Works has approved a request for appropriations amounting to $3,554,000 for development work at the City Light Gorge powerhouse on the Skagit River.

The appropriation includes $1,402,000 for new work remaining after completion of the main contracts. This new work includes a new crane, suspension bridge riprapping, communications facilities, cleaning and painting of the powerhouse, wiring and lighting, testing crane, grouting at the Gorge Dam and other work.

Installing new generator

New and replacement equipment in connection with the addition of a 60,000-kw. generator at the powerhouse, including generator regulators, unit substations, concrete lining in the tunnel adit, grouting of foundations, etc., accounts for $644,000.

A total of $917,000 will pay for contract work running over estimates, including hydraulic turbine, butterfly valve and the generator.

Additional items of repair and construction, estimated to cost $581,000, include repair of the tunnel intake; grinding tunnel floor; riprapping and cribbing railway pier and work on three penstocks.

Tax-aid support pledged to industry for building waste treatment plants

Interstate river commissions, citizens recreational groups, agree on accelerated amortization plan at Washington meeting

Industry can expect help from interstate river commissions and citizens recreational groups in supporting legislation to permit rapid write-off of industrial waste treatment plants. Prospects for a common stand have become clearer as a result of an exploratory meeting in Washington.

Spokesmen for more than 20 organizations, broadly representative of the three viewpoints, dissected bills now awaiting hearings before Congressional committees. Without dissent, the meeting concluded that the Byrnes bill offers the best and fairest means so far suggested for speeding construction of waste treatment facilities by industrial firms.

Tax help proposed

Introduced this year, the Byrnes bill would allow amortization of industrial waste treatment plants in five years. Tax savings would cut the cost of these non-productive facilities. Sanitation officials, as well as industrialists, point out that the savings would be particularly important to smaller businesses.

Involving taxes, the three bills are now before the House Ways and Means Committee. Data on the accelerated amortization proposal are being prepared by the Joint Committee on Internal Revenue Taxation. Chances for early hearings on the industrial waste treatment proposal depend upon its being considered in connection with a new general tax bill. The Ways and Means Committee faces a tremendous task in drafting a 1950 tax measure.

Proponents of the Byrnes bill point out that the Water Pollution Control Act of 1948 enables the federal government to sue owners who fail to build treatment works for pollution that is declared a public nuisance. It is no more than just, they contend, that Congress give some assistance to industries now compelled to install treatment facilities.

See plants encouraged

Those attending the Washington meeting agreed that tax incentives would encourage construction of industrial waste treatment plants. Money has been the stumbling block for many companies in doing their part toward cleaning up the streams.

Accelerated amortization also could help equalize competition between industries in different areas.

According to PHS officials, the Byrnes bill has a control feature that merits approval. Industrial treatment plants would not be certified for rapid write-off until they had been approved by the state health agency and by the surgeon general acting for the federal government. This safeguard would assure adequate waste treatment and would allow appropriate consideration of plants that reclaim by-products as well as those that merely discharge treated wastes into the streams.

O'Dunne heads committee

Following last week's meeting, a committee was appointed to continue the activity and convene future gatherings where all interested groups may be represented. The committee is headed by Eugene O'Dunne, Jr., Washington counsel of the National Association of Wool Manufacturers, 236 Southern Building, Washington, D. C.

Indicative of federal interest in the problem, studies of water pollution caused by industrial wastes already are under way in 45 states, four territories and the District of Columbia. They are financed by federal grants to local agencies from a Congressional appropriation of $1,000,000 for fiscal 1950 (ENR, Aug. 11, p. 20). These investigations—and existing data available in the states—will contribute basic information to continuing comprehensive study projects now being carried on by Public Health Service engineers.

Reports out next spring

Reports will be made periodically by federal engineers for each of the ten major river basin areas into which PHS' Division of Water Pollution Control has divided the country. Preliminary reports will begin to come into Washington headquarters early in 1950. It is expected they will be made public in the spring.

These reports—and more particularly the specific reports of the state agencies—will put the finger on pollution conditions produced by industrial wastes. They will call special attention to those situations that can be corrected by known methods of waste treatment. From there on, it will be up to the offending industries to act.

Chicago gets truck-mixed concrete

Ending a long and somewhat puzzling blockade, concrete was being mixed in trucks enroute to the job in Chicago last week—for the first time in the city's construction history.

For many years, Chicago was one of the few cities in the United States where no concrete was delivered to the job in mixing trucks. Instead, all concrete was batched and mixed on the job—with resultant traffic snarls and blocking of busy downtown streets.

But last week, Material Service Corp. put into operation a $500,000 fleet of 50 mixer trucks, and reported that its new Ready Mixed Concrete Division had spent nearly the same amount for supplementary plant equipment. On their first job (the Chicago Herald-American plant addition) the trucks poured 600 cu. yd. in 10 hours.

Appearance of the mixing trucks on Chicago's streets brought an immediate flood of contradictory comment as to why the system never had been used in the city previously.

Reason most often quoted was a reported Operating Engineer union rule that required an operating engineer to ride each truck with the driver—to push the buttons that start and stop the mixing mechanism. But Operating Engineer union heads have always vehemently denied that any such rule existed. And in fact, the Material Service Corp. officials said the union was falsely accused, added that no operating engineer now rides their trucks as crew for the regular Teamster-Union driver.

Several other unions—notably the laborers—have been understood to be opposing the use of the mixers.

USBR authorizes bids on water supply project

An early call for bids on a water supply project for Santa Barbara, Cal., and for 29,650 acres of irrigable land in Santa Barbara County has been authorized by the Reclamation Bureau. Chief Engineer L. N. McClellan will solicit offers on the $34,189,000 project.

Outstanding portions of the plan include Cachuma Dam and reservoir, to store 210,000 acre-ft. of flood water; the 6-mi. Tecolote diversion tunnel; the 28-mi. Goleta-South Coast gravity pipeline and five regulating reservoirs. The latter would be built along the conduit to regulate and conserve water diverted from the Cachuma reservoir.

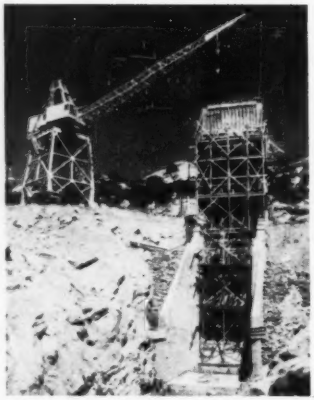
First bids are expected to cover the tunnel. Estimated cost of the 33,700-ft. tunnel which is 7 ft. dia. is $5,480,000. Bids also will be asked on the conduit, whose Goleta section is estimated to cost $3,089,000. Its Carpenteria section is estimated to cost $2,113,000. Cachuma Dam, on the Santa Ynez River, will cost an estimated $17,431,000. It will rise 216 ft. above the river bed and contain 6,980 cu. yd. of concrete. Initial water delivery is scheduled for 1954.

AASHO to ask more funds to buy rights-of-way

An appropriation of $100,000,000 for the purpose of advancing funds to state highway departments for the purchase of rights-of-way is to be proposed to Congress as part of the program adopted by the American Association of State Highway Officials at its Chicago meeting (ENR Dec. 1, p. 13). Repayments to this fund could be made over many years.

The AASHO also plans to ask Congress to raise the present one-third limit on federal aid for right-of-way purposes to one-half.

When representatives of the AASHO appear before Congress early next year to urge the passage of new federal aid legislation, they will recommend a $10,000,000 highway disaster relief fund for use by the Bureau of Public Roads in case of floods and other emergencies.



PROPS FOR SUPERSONIC ERA—This 40-ft. tower will be used to test missile propulsion systems at North American Aviation's Aerophysics Field Laboratory, Santa Susana, Cal. It is to be vibration and shockproof. Gantry crane with 100-ft. boom will lower propulsion systems into test structure. Tests will be observed from a blockhouse with 18-in. thick reinforced concrete walls.

Casey retires; takes job at Pennsylvania Hospital

Within a few hours after he officially took over as Ohio River Division engineer, Maj. Gen. Hugh J. Casey retired from the Army. He will become executive vice-president of the Pennsylvania Hospital, at Philadelphia.

There was no immediate announcement regarding a successor, although it was understood one had been chosen. Gen. Casey succeeded Maj. Gen. J. C. Mehaffey, who retired Nov. 30 (ENR Aug. 11, p. 8).

"On Nov. 25," Casey asserted in announcing his retirement, "I received a tender of employment in a field of broad public service which I feel I must accept."

The hospital he will take over was founded in 1751 by Benjamin Franklin.

When his retirement becomes effective Dec. 31, Gen. Casey will have completed 34 years of Army service. A 1918 graduate of West Point, he was a captain when the last war broke out, serving in Gen. MacArthur's Philippine command before Pearl Harbor. He escaped from the Philippines with MacArthur—and returned with him—as chief engineer of U. S. forces in the Pacific. He was promoted to brigadier general for gallantry in action in 1942, and became a major general while serving as chief engineering officer with MacArthur.

One of his important pre-war assignments was as officer in charge of construction of the Passamaquoddy tidal power project, in Maine.

The post Casey leaves is regarded as one of the most important at the disposal of the Corps, in view of the plans for replacing existing locks on the Ohio with high-lift structures, (ENR Dec. 1, p. 17).

Postpone one UN building scheduled for New York

With the decision by two United Nations agencies to establish their permanent headquarters in Rome and Geneva, plans for a 20-story building at the North end of New York City's UN site have been deferred indefinitely. There's some doubt that the structure ever will be built, because of a lack of prospective tenants.

Food and Agriculture Organization and World Health Organization are the agencies which went to Rome and Geneva, respectively. UN officials anticipate more defections, even though Executive Secretary Trygve Lie is reported to hope that a smaller building may be built—costing perhaps $15,000,000 as opposed to the planned $22,500,000 structure.

Nold replaces Crawford as assistant engineer chief

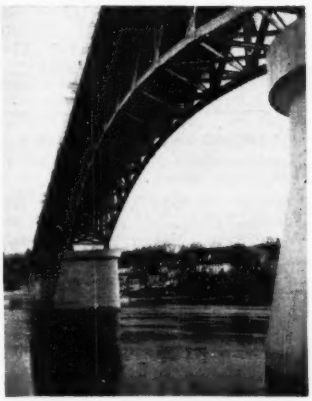
Brig. Gen. George J. Nold became assistant to the chief of engineers Dec. 1 succeeding Maj. Gen. Roscoe C. Crawford, who retired after 41 years' service.

Gen. Nold has been division engineer of the North Atlantic Division, New York City, since August, 1948. He was commissioned after his graduation from Purdue in 1917.

Before Pearl Harbor, Gen. Nold directed construction of Annette Island landing field, Ketchikan, Alaska. Appointed engineer officer, Alaska Defense Command, in October, 1941, he served in that post until June, 1944, in charge of construction of Army bases in Alaska, both in the interior and along the Aleutian chain.

An engineer with the Tenth Army from June, 1944, until October, 1945, Gen. Nold took part in planning and carrying out the Okinawa campaign. Upon his return to the United States, he served as First Army engineer until he took over the North Atlantic Division post.

Gen. Crawford saw extensive service in the United States, Canal Zone and Hawaii, before becoming assistant to the chief of engineers Feb. 1, 1946. Previously, he had served as commandant of the Engineer School, Fort Belvoir, Va., and Missouri River Division engineer, Omaha.



OPENED LAST WEEK—Maine motorists will have a lot less trouble getting through Augusta hereafter, now that the new Kennebec River bridge has been opened. By-passing the center of the city, the structure is 2,093 ft. long with a 28-ft. roadway and two six-ft. sidewalks. Its deck is 100 ft. above the river. W. H. Hinman was contractor on the substructure, American Bridge Co. for the superstructure. (Wide World Photo.)

HHFA to have regulations ready soon for redevelopment fund reservations

Slum Clearance and Urban Redevelopment Bureau studies possibility of permitting advance reservations to assist local planning

Redevelopment authorities in local communities soon will be able to apply for reservations of federal grant money from the $500-million fund set up by Congress in the Housing Act of 1949. Nathaniel S. Keith, director of Slum Clearance and Urban Redevelopment in the Housing and Home Finance Agency, announced the plan last week (Dec. 1). He told the American Municipal Association in Cleveland that the rules to be followed in requesting fund allocations would be ready this month.

Keith's division in HHFA has for some time been studying the possibility of making advance reservations to assist localities in planning their slum clearance and land development projects. The policy now established parallels the practice successfully employed by the Public Housing Administration in earmarking both dwelling allotments and planning loans for local low-rent housing projects. By reviewing preliminary applications and trimming requests to reasonable proportions for the first two years of the program, PHA holds enough in reserve to take care of other communities that will apply later.

$200 million available

The Slum Clearance Division will follow a similar procedure in allocating funds only for projects that localities plan to start before July 1, 1951. The reservations will be made from $200 million available for the first two years of the five-year redevelopment program.

Local redevelopment agencies have been authorized by state laws in about 30 states. Until enabling legislation is enacted by the remaining states, communities in those political divisions will not be eligible to take part in the program. Legislatures in most of the states will not meet again until 1951.

Keith pointed out that a request for a reservation from a locality will be simply a statement of intent and not a binding commitment. Likewise, when HHFA agrees to earmark funds for a locality, the action does not commit the administrator to enter into a contract later for federal financial assistance. Consumation of the contract depends upon the community's fulfilling all requirements of the law.

In addition to the $500 million for grants, the Housing Act also authorized $1 billion for loans. Both the grants and the loans are to assist communities in eliminating their slums and blighted areas through the assembly, clearance and sale or lease of land for development or redevelopment.

As envisioned by HHFA officials, the legislation gives cities and towns an opportunity to undertake projects that will further local plans for overall community development. In fact, the law requires that the projects fit into a comprehensive plan for the locality.

Federal financial assistance is limited to development of areas that are now predominantly residential or that will be put to residential use. For example, after slums have been cleared from a piece of land, the property can be utilized for commercial or industrial purposes if those are the most desirable uses—corresponding with the city's overall plan. But where an open area is assembled for development, the use must be mainly residential.

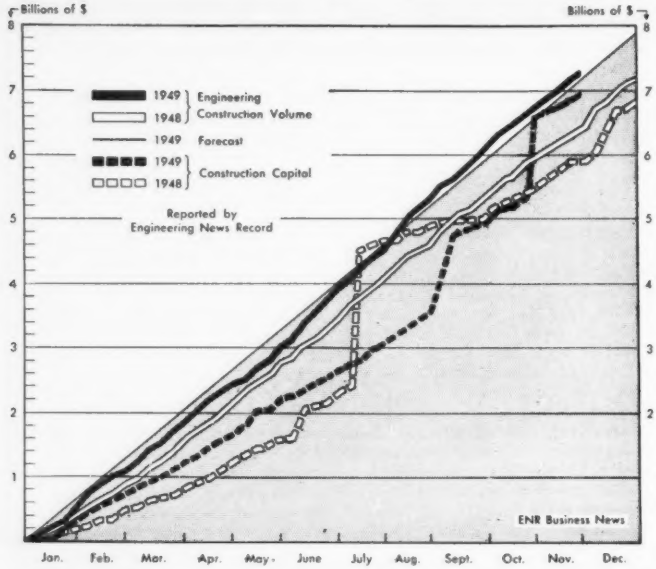
Law limits applicability

Federal grants can go only to projects that require clearance of existing, undesirable structures from the land. To make these sites economically feasible for redevelopment, there ordinarily must be a write-down of the land investment to its true re-use value. The federal grants will pay two-thirds of this write-down cost, and the community will put up the money for the other third.

Under the federal law, private enterprise is to have maximum opportunity to buy or lease a city's slum cleared sites for redevelopment. Where the comprehensive city plan calls for public use of cleared land, the property can be sold or leased to the appropriate public agency. The same write-down procedure will be followed—with two-thirds federal participation—whether the land goes for private or public purposes.

HHFA does not plan to make any advance reservations for loans from the $1 billion fund provided by Congress. The loans will be available to local redevelopment agencies for planning and carrying out their programs. Much of this work will be financed locally, and neither the communities nor HHFA can estimate at this time the amounts that may later be borrowed from the federal government.

CONSTRUCTION BUSINESS



November awards 30% above 1948

Heavy construction volume climbed out of its October doldrums to average $147.3 million worth of contract awards weekly in November as reported to ENGINEERING NEWS-RECORD. This award rate is 30 percent higher than last November, and 6 percent above October of this year.

A total of $589.2 million worth of heavy construction awards for the month brings the volume for the first 11 months of the year to $7,293 million, 17 percent higher than in 1948.

Both private and local public volume picked up in November, but Federal works hit a near-low for the year. Private heavy construction averaged $78,000,000 a week, 11 percent over October; state and municipal volume of $58,000,000 was up 4½ percent. The Federal average of only $10.4 million was down 12 percent from weekly volume in October.

Four major classifications of heavy work sparkplugged the month's contract rise, all running ahead of their 1949 average to date. November sewerage awards, averaging $8,100,000 weekly, were 48 percent ahead; bridge building, both public and private, at $9,800,000 a week, was 40 percent ahead; and unclassified construction at $28,000,000 was 79 percent above the 11-month average. Commercial building was the only type of heavy building that held its own. Bolstered by private mass-housing awards of $38,000,000 a week, commercial building averaged $47,000,000, 3¼ percent higher than the year's par to date.

Other heavy work fell below the average for the first eleven months, and with the single exception of earthwork and drainage construction, declined from October volume. Earthwork and drainage awards at $7,000,000 weekly were 54 percent over October's near low for the year, though they fell 39 percent short of the year's average. Highway awards at $13,200,000, were 26 percent below; public building at $23,700,000, 23 percent below, second lowest weekly rate this year; and industrial building, at only $7,500,000 weekly, lagged by 60 percent, lowest volume recorded since November 1946.

New construction money from security sales in November totaled $304.8 million, bringing the 11-months' figure to $6,922 million, 19 percent above 1948.

ENGINEERING CONSTRUCTION CONTRACTS REPORTED TO ENGINEERING NEWS-RECORD—NOVEMBER, 1949

Engineering News-Record reports continental U. S. Construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

Four Weeks —Thousands of Dollars (000 Omitted)

	November, 1949						U. S. Cumulative Eleven Months		% Change	
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1949 (47 weeks)	1948 (48 weeks)	48–49 Aver. Wk.	Canada Nov. 1949
Public Works											
Waterworks	2,102	2,344	1,611	897	2,059	1,564	10,577	188,924	184,154	+ 5	1,927
Sewerage	2,734	18,035	687	4,482	3,218	3,371	32,527	257,776	203,619	+ 29	1,431
Bridges	118	28,021	2,591	1,353	3,528	2,403	38,614	319,485	257,280	+ 27	496
Earthwork and waterways	3,332	1,741	8,696	329	9,003	4,960	28,061	476,641	475,154	+ 2	371
Streets and roads	3,325	14,768	9,801	2,772	15,138	7,024	52,828	836,432	927,193	− 8	216
Public buildings, residential	16,894	1,764	977	.....	303	119	20,057	353,942	142,035	+154	1,334
Other public buildings	5,625	16,282	6,596	16,375	19,812	10,140	74,800	1,091,804	899,897	+ 24	2,585
Unclassified	2,735	3,079	2,341	794	6,224	4,360	19,533	287,033	210,966	+ 39	2,321
Total public	**36,865**	**86,634**	**33,270**	**27,002**	**59,285**	**33,941**	**276,997**	**3,812,037**	**3,300,298**	**+ 18**	**10,681**
Federal government (included in above classifications)	3,436	5,988	9,244	576	13,755	8,775	41,774	929,670*	879,485	+ 8	2,615
Private											
Bridges	.....	.....	.....	697	.....	.....	697	10,025	9,143	+ 12	.....
Industrial buildings	449	5,621	5,472	6,372	9,917	2,201	30,032	884,346	1,002,296	− 10	3,896
Com'l. buildings, residential	5,039	44,557	25,312	19,693	37,531	20,181	152,303	1,604,818*	1,254,111	+ 31	10,835
Other commercial buildings	2,082	14,208	2,808	5,547	10,529	644	35,908	531,263	439,020	+ 23	680
Unclassified	346	1,115	3,608	5,411	76,387	6,490	93,377	451,353	370,975	+ 24	15,368
Total private	**7,916**	**65,591**	**37,200**	**37,640**	**134,364**	**29,516**	**312,227**	**3,481,805**	**3,075,545**	**+ 16**	**30,788**
Total Engineering Construction:											
November, 1949 — 4 weeks	**44,781**	**152,225**	**70,470**	**64,642**	**193,649**	**63,457**	**589,224**	.....	.....	.....	**41,469**
October, 1949 — 4 weeks	24,244	140,583	60,844	90,659	144,123	66,029	553,482	.....	.....	.....	74,045
November, 1948 — 4 weeks	21,028	114,808	79,092	75,866	119,066	40,647	451,112	.....	.....	.....	56,940
Eleven Months — 1949	**338,500**	**1,901,289**	**1,072,332**	**938,071**	**1,969,101**	**1,074,549***	.....	**7,293,842***	.....	**+ 17**	**574,328**
Eleven Months — 1948	299,848	1,692,589	988,818	780,541	1,612,889	991,327	.....	.....	6,375,843	.....	480,169
% Change '48 to '49	+13	+13	+11	+21	+25	+11	.....	.....	.....	.....	+22

*Revised.

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 85, went to press.)

Atomic Energy Plant—Maxon Construction Co., Dayton, O., has received contract to build K-31 gaseous diffusion unit at Oak Ridge, Tenn., for Atomic Energy Commission at $162,000,000. Giffels & Vallet, Inc., Detroit, are architects-engineers. Carbide & Carbon Chemical Corp., is responsible for procurement of special production equipment and materials and process development and design of the unit.

Apartment—Eugene B. Casey, Bethesda, Md., plans apartment near the Naval Medical Center at Bethesda to cost $10,000,000. Casey Engineering Co., Bethesda, Md., is engineer. Project is subject to zone clarification.

Public Housing—New York City Housing Authority, New York, N. Y., plans 1,600 apartment units, Breukelen Houses, in Boro of Brooklyn, to cost $16,000,000.

Steam Plant and Transmission Lines—East Kentucky Rural Electric Co-Operative Corp., Danville, Ky., plans 40,000-kw. steam plant at Ford, Ky., and 597 miles transmission lines, $10,265,000.

Natural Gas Pipeline—Prairie Transmission Lines, Ltd., Winnipeg, Man., Canada, plans natural gas pipeline from Calgary west to Blairmore, Alta., to Crow's Nest Pass, to point at Kingsgate, B. C., and then to cities of Spokane and Seattle, Wash. Cost is about $100 million. Senate of Canada approved project, but question of site is before House of Commons.

Fill for Pontchartrain Expressway—Jahncke Service, Inc., New Orleans, La., has been awarded contract for new basin canal fill, Pontchartrain Expressway, Orleans Parish, by the Louisiana State Highway Department, Baton Rouge, at $1,375,851.

School—Joseph F. Hughes & Co., Baltimore, Md., will construct the Graceland-Park-O'Donnell Heights School, for the Board of Education, City of Baltimore, at $1,060,935. Hall, Border & Donaldson, Baltimore, are architects. Faisant & Kooken, Baltimore, are structural engineers. George & Hartman, Baltimore, are mechanical engineers.

Engineering Center—Columbia University, New York, N. Y., plans engineering center to cost $5,000,000.

Pennsylvania Turnpike—Latrobe Road Construction, Inc., Latrobe, Pa., has been awarded contract for improving section of Western Extension, Pennsylvania Turnpike, at $1,422,851 by the Pennsylvania Turnpike Commission, Harrisburg.

Sewage Disposal Plant of Incinerator—City of York, Pa., plans sewage disposal plant and incinerator to cost about $2,500,000. Albright & Friel, Inc., Philadelphia, Pa., are consulting engineers. William E. Weigle, is city engineer.

Columbia Basin Channel Improvements—Morrison-Knudsen Co., Inc., Boise, Idaho, has been awarded a $1,691,666 contract for river channel improvements at Columbia River Basin, Grand Coulee Dam by the United States Bureau of Reclamation, Denver, Colo.

Hastings Reservoir—C. C. Nickel, Arcadia, will construct 50-million-gallon reservoir for water supply for the City of Pasadena, Calif., at $1,049,729. James M. Montgomery, Pasadena, is engineer.

Centennial Hall—Northwestern University, Evanston, Ill., plans Centennial Hall and field house at an estimated cost of $3,750,000. Holabird & Root & Burgee, Chicago, Ill., are architects.

Roads and Bridges—Because of unexpected delays in processing plans, the New York State Department of Public Works, Albany, has postponed bid opening on $2,933,612 projects to December 28. Included in the jobs is a grade-crossing elimination in the City of Rochester to cost $1,554,000.

Training Jetty—U. S. Engineers, Portland, Ore., awarded contract for a training jetty at mouth of the Umpqua River, Ore., to Kern & Kibbe, Portland, and McKinnon Construction Co., Sandy, at a cost of $1,141,667.

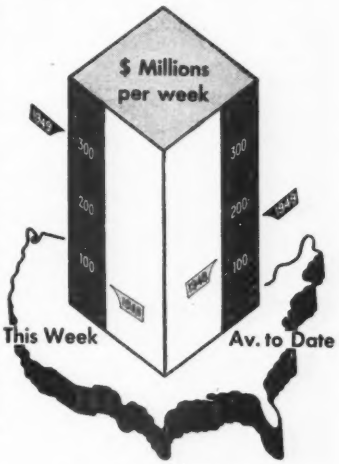
Receiving Building—Wisconsin State Department of Welfare, Madison, Wis., plans receiving building and isolation ward, treatment building, employe building and staff residences at Southern Colony Training School, Union Grove, Wis., the work to cost $3,000,000.

Newspaper Plant—Algot B. Larson, Inc., Chicago, Ill., will build newspaper plant at Lansing, Mich., for the Lansing State Journal to cost about $1,000,000. Morton L. Pereira, Chicago, Ill., is architect.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Dec. '49	480.32	230.89
Building Cost	Dec. '49	353.07	190.86
Volume	Nov. '49	265	116



Activity This Week

As reported to ENR (in millions of dollars)

Amount of contracts let

	Week of Dec. 8 1949	Cumulative 1949 (49 wks.)	Cumulative 1948 (50 wks.)	% chge av.wk.
Federal	$177.9	$1,158.0	$897.2	+32
State & Mun.	52.9	2,989.0	2,530.8	+21
Total Public	$230.8	$4,147.0	$3,428.0	+23
Total Private	78.5	3,675.8	3,393.9	+11
U. S. Total	**$309.3**	**$7,822.8**	**$6,821.9**	**+17**

Contracts by type of work

	This Week	Cumulative 1949 (49 wks.)	Cumulative 1948 (50 wks.)	% chge av.wk.
Waterworks	$11.3	$201.8	$188.5	+7
Sewerage	6.7	269.5	219.6	+25
Bridges	4.8	340.7	286.4	+21
Highways	12.5	866.4	957.5	−8
Earthwork, Waterways	3.9	513.4	487.9	+7
Buildings, Public	181.9	1,659.9	1,077.8	+57
Industrial	12.1	922.5	1,036.5	−9
Commercial	63.4	2,267.8	1,771.5	+31
Unclassified	12.7	780.9	795.9	...

NOTE: Minimum size projects included are: Waterworks and waterway projects, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

New capital for construction

	Cumulative 1949 (49 wks.)	Cumulative 1948 (50 wks.)	% chge av.wk.
NON-FEDERAL	$5,337.4	$4,872.9	+12
Corporate Securities	2,193.2	2,450.2	−12
State and Municipal	2,849.2	1,930.4	+51
U. N. Building Loan	....	65.0	...
Federal-Aid Highway	385.0	427.3	−8
Federal	1,748.2	1,558.9	+15
Total Capital	**$7,085.6**	**$6,431.8**	**+12**

Liberia Co. development plan stalled

(Continued from page 25)

Steel—will be used to build bridges and a railroad—the latter half-built now—from the port of Monrovia up to where Christie intends to strip mine his iron ore. Christie expects to be shipping more than 1-million tons of 70 percent pure iron ore a year out of his concession by the spring of 1951. He claims he can lay it down too in Youngstown cheaper than any other imported ore—well under Mesabi prices, too.

One successful tie-up

The company's one successful tieup was made with a Lancaster, Pa., businessman, Glenn M. Wylie. Wylie sold or gave Liberia a minority interest in his Liberia Cold Storage Company, Inc. The company has flourished selling frozen meats and fish and ice cream to transient ships for the most part. Wylie has also built a 15-room hotel in Monrovia. He is now exploring the possibilities of development in other fields. Just what contribution Liberia Co. made to Wylie's operation is a moot question.

A "statement of understanding" between Liberia Co. and the Liberian government involved an agreement that was to have lasted 80 years. It gave Stettinius a virtual monopoly over Liberian development—outside of Firestone's thriving rubber plantations.

Actually, now, the agreement seems to have been voided, at least in part. Liberia Mining has been granted exploration rights throughout the whole country with an option to develop what it finds.

Even tried the White House

Failure of his Liberia mission must have been a great disappointment to Stettinius. Some bondholders, most of whom were his personal friends, discreetly began to disaffiliate long ago. In desperation, Stettinius is reported to have gone to the White House for help shortly before his death.

And the Liberians, too, must be disappointed. Stettinius gave the Liberian government 25 percent of his company's stock, set aside another 10 percent for health, education and sanitation projects. Stettinius' promises of large scale public works were very attractive to a government whose total income last year amounted to less than $5,000,000.

Liberians haven't given up by any means. And indeed, somebody could well profit from the company's mistakes. A primer drawn from Stettinius' experiences might run like this:

(1) Don't try to reform a whole country in one step. With his initial capital of $1-million, Stettinius might have been able to set up a pilot palm oil or cocoa plantation that would have set the pattern for the natives. True, such investments yield only modest returns, but this might have been the basis for a thriving export trade in palm oil and cocoa—a wedge in the British West African monopoly on both products.

(2) Hire experts to manage your foreign investments. No Americans know Liberia as well as Firestone's technicians. They have built up Firestone's rich rubber empire since 1926. Yet as far as is known, Liberia Co. never consulted Firestone about the lay of the land.

(3) You can't attract private U. S. capital with dreamy schemes. Businessmen want proof before they leap. The Farrell Lines, an old Liberia operator, turned Stettinius down for this reason. Yet Farrel would back any sound enterprise for the development of the country. The company runs a coastal shipping service on the west coast of Africa, stands to gain everything from economic development of Liberia.

Maryland's school program clouded by court rule

A Maryland Court of Appeals ruling that the state's $50,000,000 school construction bond bill did not properly pass the legislature last March will force re-enactment of the measure. The court overruled Baltimore Circuit Court Judge Joseph Sherbow, declaring the bond bill invalid because of an error by a senate journal clerk

Although some uncertainty exists, state officials said the ruling will not delay the much needed school construction in the state. The bond bill probably will be re-introduced at the regular February session of the legislature.

Baltimore and Montgomery county officials protested that unless their building programs can continue without delay, congested conditions which now require double sessions in many elementary schools will be duplicated in the high schools.

David S. Jenkins, superintendent of schools in Anne Arundel County, said that "part-time classes in elementary as well as high schools will follow without doubt, if our finely adjusted building program is upset by this decision."

Gen. Wannamaker retires, takes N. J. turnpike post

Brig. Gen. W. W. Wannamaker, has been appointed executive director of New Jersey's Turnpike Authority. Chairman Paul L. Troast announced the appointment after Gen. Wannamaker retired, following 31 years of service with the Corps of Engineers.

Wannamaker will direct "the executive and administrative affairs of the authority" as established by the commissioners, Troast said. A graduate of West Point, Gen. Wannamaker was

Brig. Gen. W. W. Wannamaker

commissioned in 1918. In 1933, he became resident engineer on the Alton Lock and Dam, on the Mississippi above St. Louis. Two years later, he became assistant to the Chief of Engineers for a four-year tour. During this time, he was granted a fellowship by the Carl Schurz Foundation, of Philadelphia, and spent several months in Germany and Austria, in 1937, studying methods of flood control, hydroelectric power and navigational development. From 1939 until 1943, he served in the Southwestern Division of the Corps of Engineers. He was in charge of Dennison Dam construction, succeeding Gen. Lucius Clay, and later handled many air field, ordnance, hospital and camp jobs.

Gen. Wannamaker became chief engineer to Adm. Richard E. Byrd in 1943, undertaking a secret Pacific mission. Then he joined the Sixth Army, in New Guinea, later becoming task force engineer with the First Cavalry Division in the Admiralty Islands invasion. Then he became chief transportation officer of the Service of Supply in the Southwest Pacific. He became first district engineer of the Garrison District upon his return to the United States, initiating construction of Garrison Dam on the Missouri.

G. D. Kennedy to join cement group next year

G. Donald Kennedy, vice president of the Automotive Safety Foundation, will leave that organization Dec. 31 to take a new position with the Portland Cement Association as consulting engineer and assistant to the president. Frank T. Sheets, president of the PCA, announced the appointment at the association's annual meeting in Chicago.

Since joining the ASF in 1943, Kennedy has won nationwide attention for his work as consultant to the Special Post-War Planning Committee of the U. S. Senate and—more recently—as director of highway fact-finding surveys for seven states.

These surveys perfected techniques for thoroughgoing collection and analysis of data on a comprehensive basis covering all state, county and city highways within a state's boundaries. A study for California in 1946 was the first project of the series. It was followed by requests for similar overall studies in Oregon, Washington, Kansas, Nebraska, Mississippi and Ohio.

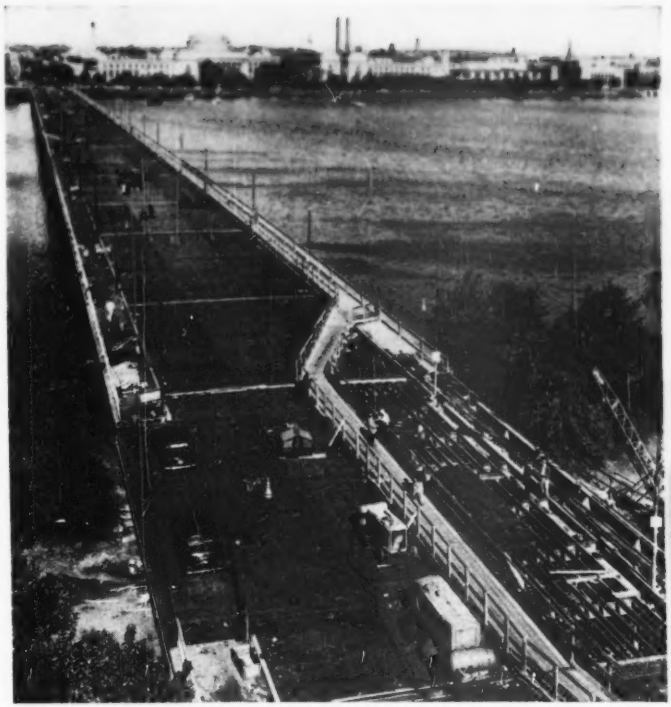
Methods widely adopted

Methods developed by Kennedy and his engineering staff have been adopted by other states. The comprehensive survey procedure has become accepted as an essential tool for intelligent planning of long-range state highway programs.

Carl E. Fritts, associated with Kennedy as highway engineer on the ASF staff, will take over as head of the foundation's highways division on Jan. 1. After returning to the ASF at the end of the war—in which he served as a colonel in the Transportation Corps, 34 months of it in the African and Italian theaters—Fritts participated in the California study and directed later surveys in Oregon, Washington and Mississippi as supervising engineer.

Kennedy resigned his position as State Highway Commissioner of Michigan in 1943 to join the ASF staff. He was president of the American Association of State Highway Officials in 1941 and served as vice-chairman of the National Interregional Highway Committee which selected the network now known as the interstate system. In the American Society of Civil Engineers, Kennedy has headed the Post-War Construction Committee.

Fritts became a member of the ASF staff in 1942. Before that, he had worked with the State Highway Department of Washington as construction, maintenance, planning and traffic engineer.



NEW ROADWAY FOR HARVARD BRIDGE—Boston's 58-year-old Harvard Bridge has been reopened to traffic after completion of a $630,000 repaving job. The work was done in 32 days less than the 90 days allowed under the contract. Engineering was done by the Metropolitan District Commission. Lewis E. Moore, Boston, was consulting engineer. Marinucci Bros. & Co., Boston, was general contractor.

Resurface Harvard bridge to speed Boston traffic

Boston's northbound through traffic has an easier time of it these days. That's because of a complete re-surfacing job on the Harvard Bridge, completed last month in well less than the stipulated time. The bridge crosses the Charles River to link Boston and Cambridge.

Completed in 58 days by working 16 hours daily, seven days per week, the resurfacing lowered the 2,170-ft. roadway by about five in. This resulted from the replacement of three-in. granite blocks with a concrete slab topped by an asphalt emulsion spray and two and one-half in. of bituminous concrete. About 115,000 sq. ft. of welded steel grid underlies the concrete.

Expansion joints were provided at span ends, and at the Boston end, ramp connections to join the new Embankment road have been provided. Trolley tracks have been removed—to make way for trolley busses—and the original cast iron fence posts have been replaced by steel H-sections. Electric sodium-vapor lighting will be installed.

The bridge was last resurfaced in 1924, when the granite block paving was installed upon steel stringers and asphalt mastic binder. Before that, flooring had been of wood since the bridge was opened in 1891.

Advises refinancing delay

San Diego County Water Authority has been advised by William E. Warne, assistant Interior secretary, to wait a year before renewing its effort to have the annual installments on the San Diego aqueduct stretched from 32 to 40 years, thus slashing the yearly payments from $500,000 to $350,000.

This plan, originally recommended to the White House in 1946 by a committee Warne headed, was shelved when the Navy's right to construct the aqueduct was validated.

J. A. Burkholder, manager of the Water Authority, said official action on the 40-year plan will be considered by the Authority. If the Bureau of Reclamation recommends construction on the second barrel, the government probably will be asked to consider the financing of both issues jointly.

Waterworks Men Have Their Say About . . .

Let's Sell Water

EDITOR'S NOTE: A strong plea for adoption of more progressive waterworks managerial policies was recently voiced by Farley Gannett, consulting engineer of Harrisburg, Pa. (ENR, Nov. 24, p. 39). He called for aggressive development of additional water supplies regardless of the increasing unit costs; complete metering to stop waste and to spread existing supplies farther; and intensive sales promotion to step up consumption and bring in greater revenue. How waterworks men feel about Mr. Gannett's proposals is reported below.

WATER NOT WASTED IN THE WEST

Samuel B. Morris
General Manager and Chief Engineer
Department of Water & Power
Los Angeles, Calif.

CONTRARY to Mr. Gannett's general statement, the western states—particularly the southwest areas of Nevada, Arizona, and California—and the major cities in the Los Angeles and San Francisco Bay regions, have for many years metered practically all service to water customers. Water is not sufficiently plentiful in these areas to allow for waste or billing on a pure service-size basis.

Los Angeles, for example, transports much of its water from 250 to 365 miles. It is neither economical nor right that waste of this water should take place with consequent higher costs to the more frugal users.

Conversely, the Los Angeles area has, by advance planning and development, always stood out as a place where plentiful water supply on a metered basis was available to industrial, commercial and residential users. In connection with the power industry the water departments have contributed largely to the industrial and residential growth of this community.

It is difficult to draw general conclusions to apply to all water works. Conditions vary not only between the semi-arid and humid sections of the United States but also between communities in these sections. In final analysis, each community presents an individual problem that must be studied before policies can be defined.

I doubt very much if a sales effort on the part of water utilities on the West Coast would result in sufficient change in water consumption to be of any economic value to the remaining customers on the system.

The object of water as well as public-power utilities must be that of supplying all of the needs of its customers adequately with the greatest economy commensurate with reliability of service. Mr. Gannett's proposal would improve the economy of some systems, but there should be caution as to its application generally to all water utilities.

PROFITS ARE RETURNED TO CONSUMERS

John Burgess
Assistant Secretary
Board of Water Commissioners
Denver, Colo.

Some years ago a real estate man was appointed to our Board of Water Commissioners. After some experience with the management of the water department he made the remark, "There is no money in this business."

How right he was! According to our city charter he must be right. Any saving in operation of the water department must be passed on to consumers and not considered as profits for other city departments to spend.

Similar requirements in other cities no doubt give Mr. Gannett some grounds for his criticism of the waterworks business as a whole. The basic principles of public ownership require us to consider economy of operation rather than expansion of business.

The Denver Water Department has never discouraged proper use of water but it discourages waste of water. It has adequately met all requests for additional service although some services, such as irrigation, make severe demands on our plant and give a very undesirable load factor.

We definitely do *not* know that the more of a product that is sold, the cheaper the price, for additional water supplies are increasingly expensive.

We have also found that the American public has a very definite limit on the price it is willing to pay for water. If the price is too high, customers develop water supplies of their own, if available. If no other supply is available, large users have a way of moving to other cities where prices are more reasonable.

We must admit that—as water-department operators—we have not fostered pure scientific investigations. Very few such industries do.

We do feel, however, that we have the good judgment to take advantage of scientific discoveries which may be applied to our work. How else could we deliver filtered water in unlimited quantities under pressure at three cents per ton in an area once described as "The Great American Desert"?

SELL WATER AT PROPER-RETURN RATES

L. S. Finch
Chief Engineer
Indianapolis (Ind.) Water Company

Mr. Gannett's article "Let's Sell Water" "clicked" with me. I long have felt that a water utility—being in the business of selling water—should sell water for any purpose to anyone willing to pay a proper price.

True, there are special cases where supply may be short, the distribution system inadequate, or where the law of diminishing return may make it temporarily impractical or uneconomical to allow uncontrolled use of water for special or seasonal purposes. In such cases, control of usage obviously should be practiced but only until the supply can be increased, the distribution system strengthened, or until increased normal demands should make it economical to accept a heavier seasonal load.

Consumers with heavy seasonal loads could be required to pay demand

charges as Mr. Gannett suggests. In addition, where necessary, they could be required to assist in financing of required improvements by payment of advances to aid of construction. These advances could be refunded as the water is used. This type of financing now is done for water-main extensions.

In brief, let's sell as much water as possible and pattern the rates to provide the proper return to the utility, possibly through the collection of demand charges on unbalanced seasonal loads.

MAKE "LET'S SELL WATER" A SLOGAN

Arthur C. King
Water Superintendent
Taunton, Mass.

Mr. Gannett, in his fine article, "Let's Sell Water," has struck at a glaring weakness typical of too many water works systems. He has presented it in full light.

"Lets Sell Water" is based upon a conviction—similar to mine—expressed to the New England Water Works Association convention on Sept. 16, 1949. My suggestion was more elemental than his. I urged preparation for more business by development of supplies, plants and distribution systems to a capacity adequate for extraordinary demands.

"Let's Sell Water" would be the next step and should be given consideration in the preparedness program.

"You Can't Do Business From An Empty Wagon" is an old adage which might be parodied into "You Can't Sell Water From An Empty Reservoir. Let's Sell Water, by all means, and make the necessary preparations to deliver the goods. I am all for it!

A word on behalf of municipal water works men should be added. Most of these public servants have been forced into their reluctance to sell water by loss of income, diverted by town finance officers.

PROMOTE NEW USES FOR WATER

Thomas J. Eaton
Water Superintendent
Public Service Co. of New Mexico
Santa Fe, N. M.

The waterworks business combines the general functions of several companies by procuring the raw material, either by impounding or pumping, processing by suitable treatment, storing for demand as a warehouse, and finally by acting as both wholesaler and retailer.

As Mr. Gannett points out, we differ radically from the usual commercial organization by failing to include a sales force to promote our product. Our only endeavor consists of the indirect approach by appealing to civic pride in our fine product and buildings—usually without the aid of paid advertising.

Gas and electric utilities exist also as monopolies in the community. Being privately owned, they are able to pay for advertising without adverse criticism. They can also pay to join national organizations to secure intangible results by national sales methods and research for additional uses.

Waterworks pay only for tangible results, operation, maintenance and additions to plant.

In retailing water, the industry provides attractive rates so that home owners use water not only for necessities as cooking and sanitation but also for luxuries—such as lawn sprinkling.

The irrigation peak causes much concern in the western waterworks. But we are not alone. Both gas and electric utilities have tremendous peaks occurring in the winter; their charges are better balanced so the customers pay for this capacity.

The waterworks got the easiest customers first. Now the need arises to investigate and promote additional household uses, the object being to decrease peak ratio between summer and winter.

Garbage grinders are one item which will help.

Possibly we can develop a winter load by selling snow removal for sidewalks. This might be done by combined hot and cold water or cold water and a chemical applied by garden hose or by a small change in some of the elaborate lawn-sprinkling systems.

Other ideas as well as sales promotion are definitely needed to speed up water use.

In acting as wholesalers of water, we should be enthusiastic about new business. The great majority of new customers adds to the base load which cuts down the peak ratio. Many customers are extremely beneficial.

Steam-electric plants have maximum demands at night but uniform ones during the remainder of the 24-hr. period and the seasonal peak is in winter.

Schools open for nine months and close in the summer. Hospitals are excellent customers—steady the year round. Radio stations, fraternal clubs, night clubs, dairies, do most of their business in our off-peak hours.

"Let's Sell Water" is a good slogan to follow but don't try to justify it by talking about electric rates. Electric rates have gone down; gas rates have not; water rates are about constant.

Advances in manufacturing technique have been mainly responsible for the changes in electric rates. Neither gas nor water can hope, as yet, for such a possibility. Water costs have declined only with more efficient distribution.

Increased base or year-round loads will give the profit desired.

WATERWORKS OPPORTUNITIES EMPHASIZED

Thomas J. Skinker
Water Commissioner
St. Louis, Mo.

Opportunities that waterworks men may have overlooked have been called to their attention by Mr. Gannett.

There are many cities without capacity to supply additional consumers and funds to increase their supply. There are other cities with an adequate supply, but sale of the surplus has been prevented for political or other reasons.

This is a timely article, so "Let's Sell Water" and take advantage of Mr. Gannett's suggestions and develop others if we can.

METER SALE: MANAGEMENT'S WAY OUT

G. W. Pracy
General Manager & Chief Engineer
San Francisco Water Dept.
San Francisco, Calif.

Mr. Gannett's article is a combined plea for metering all water sold, and for more aggressive salesmanship on the part of the water plant operator.

I am in hearty accord with the plea for metering water. San Francisco has been operated on a fully metered basis for the past thirty years. This is the only way by which to sell water.

I think that the waterworks operator does on the whole put forth an effort to sell water. I know we do

here, and my contact with the water men throughout California convinces me that they do a good job.

It is true that we do not advertise as do the privately owned utilities, but advertising would be very difficult to handle under municipal management.

I think the comparison of electric rates is not quite fair as conditions in the two utilities are entirely different.

On the whole I think that waterworks operators are doing a good job.

SELLING HINDERED BY REGULATIONS

Harry W. Hall
Chief Engineer
Washington Suburban Sanitary Commission
Hyattsville, Md.

I am inclined to agree with Mr. Gannett, in general. But I cannot share his belief that the chief lack on the part of waterworks men is salesmanship, "undoubtedly due to the desire not to sell water." Witness the many publicity efforts directed towards improving public relations. Certainly there is no indication of lack of salesmanship here.

I have, over the years, heard more than one waterworks official express the opinion that he was out to sell water, although no one seems to have attempted to express himself in the same emphatic manner as Mr. Gannett. This indictment appears to me to be more severe than justified, but —if it arouses a heightened interest in the subject by this manner of emphasis—it will have served its purpose. The issue is not quite as clean cut as he would have it appear.

Probably if the waterworks officials were not subjected to restrictions such as charter provisions, referenda and other municipal regulations in extending their facilities, the situation might be entirely different.

Consider also the small community in a locality with limited water resources; there are areas of this kind.

Electric power plants can be built practically anywhere because power can be generated on the spot. The same can be done with gas. Can you do this with water? You cannot make it; you must find it.

Recently a gas utility practically doubled capacity of its distribution system by introducing natural gas with a higher Btu. value. This cannot be done with a water system.

There are, furthermore, no end products resulting from use of any of these other utilities. Once service has been rendered the utility is through.

Increased use of water beyond generally accepted normal requirements may create the necessity of increasing sewer facilities, an added expense. This, however, is not a difficult or impossible task but it can be an additional item entirely beyond the control of waterworks people.

Use of water, therefore, is tied in with other disposal facilities in a manner in which the other types of utilities are unaffected.

Mr. Gannett says the waterworks officials do not desire to sell water and most of them try to reduce water consumption instead of to increase it. Is this entirely because of the waterworks men's basic thinking or because of other reasons? I wonder.

RE-ORIENT THE PUBLIC'S THINKING

W. R. LaDue
Chief Engineer & Supt.
Bureau of Water & Sewerage
City of Akron, Ohio

Mr. Gannett's very intriguing article could be interpreted to be both provocative and, at times, unfair.

The basis of indictment seems to lie in the statement "What the waterworks industry needs is a complete reorientation of its basic thinking." I would question the term "basic thinking" unless it were interpreted to mean the background for the mass of state laws, enabling legislation and local ordinances which delimit operations of municipal waterworks. These regulatory measures are as varied as number of states in which they are developed. Laws, of course, are the reflection of public thinking and public opinion. People usually obtain what they want.

Called to mind are such requirements as issuance of relatively short-term bonds in financing, control of rate schedules by elective officials, and lack of continuing policy of directorship exemplified in change of municipal councils and, again, elective officials. With these to work with, those waterworks men, who have been given responsibility for operating waterworks, receive scant praise for their excellent job. They are doing this job under difficulties which are not comparable with the restrictions applied by government to public utilities, privately owned. This is not a defensive statement. It is a statement of fact that the American Water Works Association recognizes in its various active committees concerned with the evident problems of waterworks administration.

Waterworks men are progressive in their thinking—far in advance of the means for carrying their thinking to fruition. They must recognize, however, that citizens of any community are stockholders of the municipal corporation. To meet demands of the consuming public, hundreds of millions of dollars are spent annually in expansion, comparing favorably with amounts spent by telephone or electric companies to keep ahead of their needs.

Nature does not provide water everywhere. Water is where you find it; or you carry it with you. It is neither inexhaustible nor free, but it is cheaper than dirt; too cheap for spectacular rate reductions in the face of new requirements.

The consuming public must provide new capital by higher rates to meet new demands. Let us, therefore, rephrase Mr. Gannett's statement to read, "What the waterworks industry needs is a complete re-orientation in the public thinking," especially in values.

Mr. Gannett has given specific cases and questions which could and should be answered. The answering would reflect to the glory of the waterworks man.

MANAGERIAL AIMS SET FORTH

W. A. Kunigk
Superintendent, Water Division
Department of Public Utilities
Tacoma, Wash.

A progressive business attitude is necessary in waterworks management so that a community may receive maximum return from the investment in a water-utility plant. Such a management plan should include the following:

1. Metering of all domestic, industrial and fire-line services.
2. Development of an ample supply of water over and above immediate needs to provide for future growth of population and industries.
3. Development of greater markets by aggressive salesmanship.

These three prerequisites of a successful water utility have been met just as often by municipally owned plants

as by privately owned utilities, and almost without exception, by furnishing water service at considerably lower rates.

In Tacoma we do not try to expand our markets by recommending that our customers use water-power operating equipment such as hydraulic elevators, basement pumps, washing machines and egg beaters. We well know that such equipment and gadgets can be operated at a small fraction of the water-power cost by electric power.

Tacoma is now completing development of an additional supply of 30-mgd. capacity from ground-water resources to take care of the rapidly increasing demand by new industries. An expenditure of nearly $750,000 from water department funds will be completed shortly in providing these new water facilities in the newly created industrial area on the Tacoma Tide Flats.

Tacoma's industrial engineer of the Light and Water Utility Departments is ever ready to meet with representatives of any prospective industry at any time in any part of the United States.

The writer has been for many years a member of the Industrial Bureau of the Chamber of Commerce, mainly for the purpose of keeping in close touch with industrial progress and assisting, wherever needed, with estimates, rates, capacities and other pertinent information on supply needs.

The keynote in expanding markets for water utility lies in attracting diversified industries to develop a high uniform-load factor throughout the year.

Very little study is necessary to bring out the fact that sales promotion of air conditioning machines and equipment will not accomplish this result.

Mr. Gannett's summary indictment of the water business in general and the municipally operated plants in particular—because of lack of progressiveness—is entirely uncalled for. It will be much resented by many engineers and superintendents in the waterworks field.

Low-Cost Conductive Flooring Developed For Hazardous Areas in Hospitals

CONDUCTIVE FLOORING to carry off static electric charges and prevent sparks can be constructed at a cost little greater than that of ordinary tile or terrazzo, if acetylene carbon black is mixed with the cement.

This was demonstrated by tests made by the National Bureau of Standards and reported in an article, "Low-Cost Conductive Flooring for Hospitals," by N. L. Griffin and D. E. Daniel, THE CONSTRUCTION SPECIFIER, July, 1949.

When explosions of anesthetic gases have occurred in hospital operating and delivery rooms, the villain in one out of four cases has been static electricity, the article points out. To prevent such accidents, conductive flooring is generally employed to carry off the static charges. The usual type (with a grounded metal grid) is not fully satisfactory from either a safety or an economic viewpoint, the authors claim, and an investigation was made to find a more suitable substitute.

The electrical resistance of such a flooring should be adjusted to serve two purposes: 1. It must be low enough to carry off static charges; and 2. It should be high enough to preclude even mild shocks from accidental contact with live conductors or faulty equipment. Studies indicated that a flooring with a resistance of from 104,000 to 250,000 ohms will give maximum protection from the combined dangers of sparks and shock.

Recommendations for terrazzo

The combination of test results led to the following rules of procedure for construction of terrazzo floors in hazardous locations in hospitals:

Construct as in commercial practice, in accordance with the standards established by the National Terrazzo and Mosaic Association, Inc., except that acetylene carbon black shall be added to the cement in both underbed and topping. This carbon is produced by the thermal decomposition of acetylene gas under carefully controlled conditions. It forms chains of particles when mixed with concrete, rather than groups as are formed by carbon black of coal, petroleum or natural gas derivatives, and the chain formation creates an electrical path.

For the underbed, the mix should consist of one part of portland cement, to which three percent by weight of this carbon black should be added, and four parts of coarse screened sand. The mortar should be brought to a level not less than $\frac{5}{8}$ in. below the finished floor.

Grounding of reinforcing

A wire mesh of either 18 ga. or larger galvanized iron wire; 20 ga. or larger copper, with not more than 6-in. openings; or other suitable highly conducting metal should be embedded in the underbed or installed between the underbed and topping. A ground or test connection should be bonded to the mesh. When grounding is required, the wires should be permanently and effectively grounded to a cold-water pipe or other suitable ground.

The terrazzo topping mix should consist of one part portland cement, to which two percent by weight of acetylene carbon black should be added, and two parts of marble granules having equal parts of No. 1 and No. 2 chips of any desired color. The materials should be mixed dry before water is added. Plastic or other similar nonmetallic divider strips about $1\frac{1}{4}$ in. deep, forming squares of from 2 to 3 ft. in each direction, should be installed with the top flush with the finished floor surface.

Recommendations for ceramic tile

The tests have also led to a tentative specification for ceramic tile floors in hazardous locations:

Construct as in commercial practice, in accordance with the standards set by the Tile Manufacturers' Association, Inc., except that acetylene carbon black should be added to the cement in both underbed and grout for these floors.

The underbed mix should consist of one part of portland cement, to which two percent by weight of carbon black should be added, and three parts of clean sharp sand. A wire mesh, as in the case of terrazzo, should be embedded in the underbed.

Floor tile should be 1 x 1 in. or less. Joints should be grouted flush with the finished floor with a mix of neat portland cement containing two percent by weight of carbon black. All weight percentages are given with reference to weight of dry cement.

The authors also point to the necessity of other protective measures in hazardous areas. These include adequate ventilation, maintenance of relative humidity at or above 55 percent and careful grounding of all equipment.

New pavement unit—square-yard-inch—reported by BPR

Board-foot measure has a new sister unit of measurement: The square-yard-inch of pavement, for which the Bureau of Public Roads has just released average unit prices bid in 1948.

Heretofore pavement price quotations have been per square yard, regardless of pavement thickness, or per cubic yard. This per square-yard-inch refinement gives a good measure for comparing prices bid on similar types of pavement. It should not replace the price per square yard for comparing costs of different types of pavement—of bituminous and portland cement concrete pavement, for example.

Average pavement thickness varies from 0.66 inch for bituminous surface treatment to 8.13 inch for portland cement concrete surface and from 6.20 to 6.92 inches for gravel and macadam bases.

Average price per square-yard-inch ranges from $0.062 for gravel and clay gravel surface to $0.454 for bituminous concrete surface and from $0.058 to $0.138 for gravel and macadam bases.

The accompanying tables show: I, national averages, for pavement thickness and cost per square inch, and II, averages by state and area.

I National Average-Pavement Thickness & Prices per square-yard-inch—1948

Type of pavement	U. S. Aver. Thickness Inches	Price per syi	Price per sy	Total sq yards
Base				
Gravel & clay gravel	6.20	0.058	0.360	77,609,092
Macadam or stone	6.92	0.138	0.958	19,514,401
Surfaces				
Gravel & clay gravel	2.47	0.062	0.153	73,279,189
Bitum surf treat	0.66	0.407	0.267	54,455,455
Bitum road mix	2.44	0.229	0.559	30,246,464
Bitum intermediate	2.82	0.283	0.798	14,104,487
Bitum concrete	2.49	0.454	1.131	15,729,911
Portland cmt concrete	8.13	0.421	3.423	19,098,716

II STATE AVERAGES—PAVEMENT THICKNESS AND PRICE—1948

Average Thickness in Inches

	Base		Surface					
	Grav & Cl. Grav	Macad Stone	Grav & Cl. Grav	Bitum Surf. Tr.	Bitum Rd. Mix	Bitum Interm.	Bitum Concr.	Port. Cmt. Concr.
Conn	9.40	7.52	.....	0.78	.....	3.68	2.31	8.00
Me	20.66	5.21	.....	.....	1.97	2.73	2.02	.....
Mass	.....	4.66	.....	.....	.....	3.48	2.38	8.00
N. H	13.65	4.40	2.43	0.34	3.50	.....	2.93	.....
Vt	11.75	5.49	.....	0.30	2.49	.....	2.70	8.00
R. I	5.26	6.06	.....	0.86	2.03	3.73	2.83	.....
N. Y	10.18	3.60	9.33	0.50	2.87	2.87	2.41	8.58
N. J	9.08	5.60	7.17	0.59	2.45	3.67	1.64	9.77
Div. 1	**11.79**	**4.81**	**5.31**	**0.42**	**2.74**	**3.18**	**2.44**	**8.72**
Del	.....	6.59	.....	0.91	.....	.....	3.30	7.43
D. C	.....	.....	.....	.....	.....	.....	.....	8.00
Md	6.56	5.10	9.52	.....	2.71	3.21	1.82	8.91
Ohio	5.94	7.89	3.89	0.95	1.77	3.03	2.53	8.67
Penn	.....	11.17	.....	1.02	2.32	3.34	2.33	9.07
Va	5.98	4.44	.....	0.63	.....	2.37	3.06	8.65
W. Va	5.52	10.10	.....	.....	.....	1.62	2.00	8.00
Div. 2	**5.72**	**8.20**	**8.75**	**0.76**	**1.95**	**2.89**	**2.68**	**8.80**
Ala	7.19	7.55	.....	0.45	.....	0.79	.....	8.00
Fla	6.00	7.28	.....	0.62	6.02	1.34	1.84	7.01
Ga	7.04	6.71	7.94	0.69	1.27	.....	2.23	7.80
Miss	6.83	.....	1.86	0.69	2.17	.....	1.87	6.53
N. C	.....	7.76	.....	0.83	.....	3.62	2.64	8.00
S. C	.....	5.23	.....	0.78	0.81	.....	2.00	.....
Tenn	4.94	5.23	5.18	0.52	1.15	1.13	5.54	8.34
Div. 3	**6.70**	**6.56**	**2.40**	**0.67**	**2.62**	**2.85**	**2.48**	**7.68**
Ill	7.26	6.56	4.11	0.55	2.41	2.26	3.11	9.58
Ind	8.64	.....	.....	0.66	1.93	.....	.....	7.17
Ky	1.04	10.95	2.34	.....	3.58	3.11	2.72	7.48
Mich	4.90	.....	4.53	0.86	2.63	2.28	2.23	8.17
Div. 4	**6.75**	**7.26**	**3.95**	**0.62**	**2.38**	**2.28**	**2.93**	**7.95**
Minn	6.02	4.51	2.20	.....	1.35	1.75	.....	7.41
N. D	6.02	.....	3.03	0.33	.....	.....	2.77	7.40
S. D	5.27	.....	2.53	1.33	2.67	2.44	.....	7.78
Wis	5.45	.....	4.16	1.15	2.52	.....	3.19	7.75
Div. 5N	**5.61**	**4.51**	**2.71**	**1.26**	**2.22**	**1.94**	**2.84**	**7.57**
Iowa	7.80	7.66	2.46	0.68	.....	.....	.....	8.12
Kan	7.50	9.11	1.35	0.45	2.67	.....	2.41	8.87
Mo	4.42	5.99	1.48	0.57	2.19	.....	2.03	7.77
Neb	.....	.....	1.33	.....	2.91	.....	.....	7.94
Div. 5S	**7.04**	**6.86**	**1.54**	**0.57**	**2.82**	.....	**2.20**	**8.24**
Ark	5.53	.....	3.36	.....	2.19	.....	1.52	8.00
La	6.51	.....	.....	0.90	.....	.....	.....	6.50
Okla	7.58	.....	2.86	0.83	.....	.....	1.89	6.93
Tex	6.17	.....	5.67	0.49	.....	.....	1.38	8.57
Div. 6	**6.22**	.....	**2.95**	**0.53**	**2.19**	.....	**1.53**	**8.04**
Ariz	4.15	9.07	.....	1.16	2.68	2.97	.....	7.17
Calif	5.63	.....	.....	0.63	2.53	3.51	2.61	8.00
Nev	5.16	.....	2.32	.....	2.61	2.98	.....	7.00
Div. 7	**5.13**	**9.07**	**2.32**	**0.80**	**2.61**	**3.36**	**2.61**	**7.97**
Idaho	5.25	9.16	4.36	0.51	2.92	3.15	.....	.....
Mont	4.05	.....	2.87	0.71	2.02	3.89	.....	.....
Ore	9.68	6.68	4.05	1.08	.....	2.38	5.00	8.00
Wash	9.62	8.76	2.01	0.73	.....	.....	2.17	8.00
Div. 8	**6.19**	**7.64**	**3.03**	**0.75**	**2.21**	**2.51**	**2.94**	**8.00**
Colo	3.85	.....	1.94	0.48	2.33	2.80	.....	.....
N. M	3.35	3.20	.....	0.34	2.15	.....	.....	.....
Utah	5.06	.....	5.04	.....	2.65	3.89	.....	8.00
Wyo	6.04	.....	.....	0.38	1.81	2.69	.....	.....
Div. 9	**4.39**	**3.20**	**4.34**	**0.39**	**2.23**	**3.54**	.....	**8.00**
Hawaii	.....	7.70	.....	1.31	.....	3.17	2.22	7.08
P. R	9.23	8.34	.....	1.49	4.17	3.98	.....	8.00

Price per square-yard-inch

	Base		Surface					
	Grav & Cl. Grav	Macad Stone	Grav & Cl. Grav	Bitum Surf. Tr.	Bitum Rd. Mix	Bitum Interm.	Bitum Concr.	Port. Cmt. Concr.
Conn	$0.114	$0.178	.....	$0.504	.....	.....	$0.291	$0.548	$0.395
Me	.028	.208	.....	.....	$0.202	.367	.705	.....
Mass	.....	.187	.....	.....	.....	.286	.400	.566
N. H	.032	.158	$0.056	.482	.271	.....	.491	.....
Vt	.036	.133	.....	.950	.314	.....	.437	.523
R. I	.038	.117	.....	.366	.350	.284	.428	.....
N. Y	.046	.263	.040	.428	.258	.363	.553	.476
N. J	.070	.216	.029	.307	.271	.328	.783	.499
Div. 1	**.042**	**.200**	**.036**	**.540**	**.257**	**.324**	**.511**	**.470**
Del	.....	.277	.....	.390	.....	.....	.490	.494
D. C	.....	.....	.....	.....	.....	.....	.....	.418
Md	.058	.258	.049	.....	.355	.427	.564	.447
Ohio	.168	.203	.136	.374	.324	.361	.445	.447
Penn	.....	.184	.....	.688	.399	.409	.600	.510
Va	.082	.166	.....	.379	.....	.279	.375	.392
W. Va	.091	.435	.....	.....	.....	.482	1.002	.576
Div. 2	**.095**	**.188**	**.054**	**.446**	**.352**	**.379**	**.503**	**.482**
Ala	.044	.083	.....	.582	.....	.399	.....	.725
Fla	.037	.151	.....	.487	.144	.495	.565	.457
Ga	.041	.117	.032	.516	.516	.....	.418	.426
Miss	.060	.....	.126	.555	.350	.....	.497	.391
N. C	.....	.139	.....	.489	.....	.288	.311	.402
S. C	.....	.314	.....	.472	.467	.....	.489	.....
Tenn	.094	.134	.078	.467	.366	.441	.325	.403
Div. 3	**.052**	**.131**	**.103**	**.516**	**.221**	**.298**	**.414**	**.407**
Ill	.091	.162	.117	.513	.303	.452	.524	.480
Ind	.157	.....	.....	.564	.275	.....	.....	.453
Ky	.133	.177	.103	.....	.782	.572	.388	.562
Mich	.073	.....	.079	.410	.183	.254	.637	.368
Div. 4	**.105**	**.165**	**.096**	**.482**	**.279**	**.314**	**.507**	**.407**
Minn	.051	.080	.051	.....	.241	.266	.....	.402
N. D	.067	.....	.048	.200	.....	.....	.340	.467
S. D	.079	.....	.049	.296	.310	.315	.....	.466
Wis	.056	.....	.044	.271	.185	.....	.505	.436
Div. 5N	**.066**	**.080**	**.049**	**.293**	**.203**	**.283**	**.368**	**.428**
Iowa	.127	.137	.045	.428	.....	.....	.....	.389
Kan	.090	.104	.061	.342	.157	.....	.490	.361
Mo	.150	.132	.069	.396	.300	.....	.482	.425
Neb	.....	.....	.074	.....	.276	.....	.....	.404
Div. 5S	**.104**	**.126**	**.065**	**.395**	**.248**	.....	**.485**	**.391**
Ark	.079	.....	.166	.....	.269	.....	.522	.491
La	.147	.....	.....	.379	.....	.....	.....	.510
Okla	.094	.....	.083	.305	.....	.....	.381	.416
Tex	.052	.....	.071	.349	.....	.....	.368	.323
Div. 6	**.056**	.....	**.082**	**.340**	**.269**	.....	**.377**	**.360**
Ariz	.053	.075	.....	.174	.176	.242	.....	.628
Calif	.100	.....	.....	.257	.156	.227	.304	.368
Nev	.033	.....	.037	.....	.162	.213	.....	1.076
Div. 7	**.070**	**.075**	**.037**	**.219**	**.164**	**.228**	**.304**	**.381**
Idaho	.040	.079	.054	.320	.165	.265	.....	.....
Mont	.067	.....	.076	.365	.251	.584	.....	.....
Ore	.058	.084	.060	.329	.....	.254	.417	.467
Wash	.043	.076	.090	.253	.....	.....	.381	.507
Div. 8	**.053**	**.080**	**.071**	**.325**	**.228**	**.263**	**.398**	**.469**
Colo	.059	.....	.073	.569	.298	.409	.....	.....
N. M	.056	.068	.....	.309	.201	.....	.....	.....
Utah	.031	.....	.036	.....	.146	.219	.....	.438
Wyo	.049	.....	.....	.655	.283	.287	.....	.....
Div. 9	**.050**	**.068**	**.039**	**.554**	**.231**	**.237**	.....	**.438**
Hawaii	.....	.248	.....	.593	.....	.504	.673	.586
P. R	.111	.132	.....	.352	.420	.452	.....	.688

THE 300-BED 9-STORY HOSPITAL at Wilmington, Del., which is due to be finished five months ahead of schedule.

Complex VA Hospital Goes Up Fast

R. Y. Taggert
Resident Engineer, Corps of Engineers,
U. S. Army, Wilmington, Del.

PLANNED well and executed swiftly, construction operations on the Veterans Administration Hospital at Wilmington, Del., have proceeded at such a pace that the building will be completed four months ahead of schedule.

Construction of the 320-bed general medical hospital started in March, 1948; completion was scheduled for May, 1950. Now, however, it appears that the $7,000,000 building will be finished this month. The speed of this job appears even more remarkable in view of unexpected foundation difficulties that delayed work at the start and considering the complexity of the facilities provided

The main hospital building, consisting of a ground floor, eight hospital floors and four penthouse levels for mechanical spaces, is situated on a hill sloping toward the west. It is irregular in plan, roughly 430 ft. long by 252 ft. wide, with the principal axis running east and west. The main entrance is on the south and the kitchen and service entrance on the north. A drive from Capitol Trail serves the main entrance at first-floor level, and a branch drive leads to the laundry, boiler house, garage, maintenance shop, auditorium and quarters for attendants, manager's staff and nurses.

Rocks damage pile shells

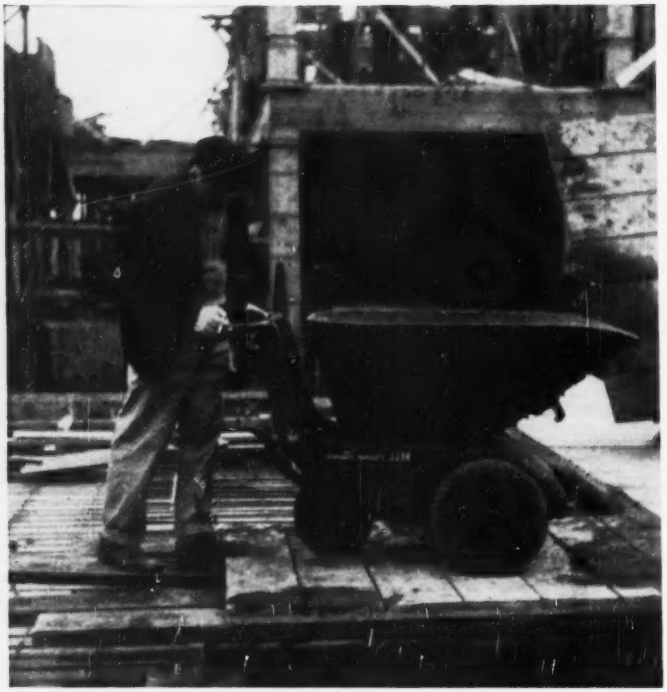
The structure rests on constant-section, button-bottom, cast-in-place concrete piles. The enlarged, high-early-strength, 4,000-lb. concrete point was driven by a heavy steel mandrel. When bearing was reached, an 18-ga. 12-in. nominal diameter, helical shell was dropped through the mandrel and attached to the point. Then the mandrel was withdrawn, and adjacent piles were driven to grade.

Considerable time was lost in this operation when loose rock or boulders were forced through the light shell, collapsing the pile. The difficulty was successfully overcome by dropping a full-length section of 10-in. steel pipe inside the shell and leaving it in place until the piles were ready for concreting.

The time lost, however, was made up in part by rushing underground work to completion and then casting the ground-floor slab immediately. The job was thus brought quickly out of the mud and a firm base secured for shoring the first-floor formwork.

Time was saved also by concentrating construction on the center and east wings. Closing them in quickly provided covered and easily heated work areas for all trades. Utility and masonry subcontractors continued full time throughout the winter and laid the basis for early completion.

Faced with lost time due to in-



POWERED BUGGIES, filled with concrete at a truck mixer and hoisted to the various casting floors, speeded the placement of concrete.

ability of the regular suppliers to meet delivery dates on the then critical items, the contractor paid a premium for material from other sources to keep the work moving. Delays were thus kept to a minimum, so that all trades worked full blast, one pushing the other and adding speed to the already fast-moving job.

Concrete was batched at a central mixing plant and mixed in transit. At the site, it was loaded into powered buggies, which were hoisted to the various casting floors.

Marine plywood forms were used for walls, beams and slabs. Each member was separately detailed, the form being prefabricated and impregnated well ahead of erection. An average of six uses were secured from the forms which, with the time saved in erection, added to the economy of this method of forming.

Air-entraining agent added at mixer

The hospital has a structural frame of air-entrained reinforced concrete. Air entrainment made possible the use of 4-in. slumps in heavily reinforced walls and slabs with no appreciable honeycomb. To enable close control of the air content to be maintained, the entraining agent was added at the mixer. The air content did not vary more than one percent throughout the job.

Three concrete mixes were used: For all reinforced concrete work except columns, a 1:2.38:4.58 mix, with 6.25 gal. of water and 35 to 40 cc. of the air-entraining admixture per bag of cement, produced on the average a concrete with an air content of 4.59 percent, a slump of 4.07 in. and a strength of 3,447 psi. For the concrete that was not reinforced, a 1:2.49:4.58 mix, with 6.27 gal. of water and 30 to 40 cc. of admixture per bag of cement, gave a concrete with an air content of 4.29 percent, a slump of 3.71 in. and a strength of 3,227 psi. For the columns, a 1:2.08:3.51 mix, with 5.69 gal. of water and 35 to 50 cc. of admixture per bag of cement, yielded a concrete with an air content of 4.76 percent, a slump of 3.79 in. and a strength of 3,985 psi.

Various finish materials used

Floors are finished with asphalt tile, linoleum, clay tile, terrazzo and dustproof concrete as demanded in the various areas. Ceilings, in general, are suspended and formed of plaster or acoustical tile. Roofs are insulated, 5-ply, composition-type on lightweight concrete fill. During construction, the glass-fiber insulation was placed on the roof-slab forms and concrete poured on top.

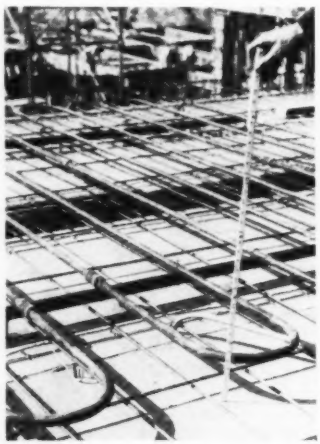
Walls below grade are concrete and, together with other exposed areas below grade, have been given a metallic waterproof coating. Exterior walls above grade have brick masonry facing, with limestone and greenstone trim, backed with brick or cinder block. Interiors generally are finished with hard white plaster. Wainscots are 5 and 7 ft. high, of matt-glazed tile and structural-glazed units.

Windows are steel casement, intermediate type, with tubular-frame window screens. Entrance doors and frames are aluminum. Interior doors in general are wood-flush type, with metal bucks, jambs and heads. Toilet stalls are metal and showers are marble.

Panel heating installed

The building will be heated with low and medium-pressure steam piped to recessed cast iron convectors. Panel heating, with pipes both in floor and ceiling, will be used for the operating suite on the third floor and the allergy rooms on the fourth floor. Extra-heavy scale-free wrought iron pipe forms the floor coils and soft-tempered copper tubing the ceiling coils and connections.

When panel-heating pipes are placed in plaster ceilings, the plaster fills the entire area between the pipes and covers the bottom surface at least



WROUGHT IRON PIPE was placed in the floors for panel heating.

¾ in. At the time of applying a finish coat, scrim cloth was worked into the surface over the entire area to reduce the possibility of cracks caused by temperature changes.

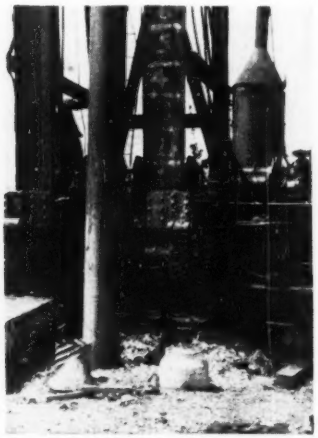
Operating-room floors grounded

To eliminate the possibility of explosion of ether fumes by electrostatic spark discharges, grounding grids were installed in the terrazzo floors of the operating rooms. The floors are divided into 4½-in. squares by strips of brass (66.67 percent copper, 33.33 percent zinc) ⅛ in. thick, ¾ in. high and slotted to a ⅜-in. depth. The strips interlock and are soldered together at intersections to form a positive electrical connection. They will conduct electrical charges to a No. 8 (B & S gage) copper wire that is securely soldered to the strips near each of the four corners in each room and grounded to the nearest cold-water pipe with metal clips. Grounding grids were also installed in the walls, ceiling and floor of the electro-encephalographic laboratory.

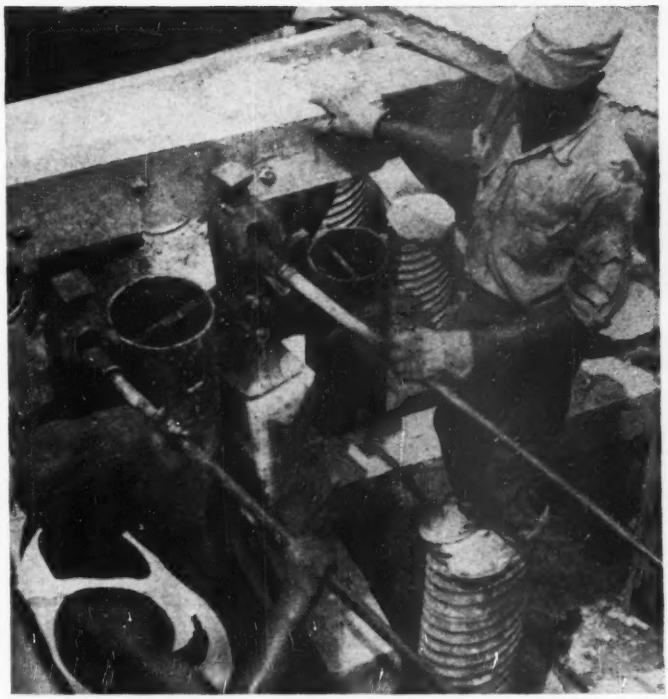
Air conditioning

An air-conditioning system with a total design capacity of 75 tons is provided for the allergy rooms and the main surgical areas. It is supplemented by a mechanical ventilation system supplying 114,170 cfm. and exhausting 124,470 cfm. for designated inside areas. Mechanical refrigeration of about 12-ton capacity is provided for the main kitchen.

The electric lighting and power system consists of an 11,200-v. primary and a 3-phase, 4-wire, 120/208-v. secondary distribution. Both incandescent and fluorescent lighting are used. Doctors-paging, nurses-call, clock, telephone and 4-channel radio public-address systems extend throughout the hospital areas and auditorium. Also, a fire-alarm system for the entire project is included in the construction of the main hospital building, with fire-protection facilities consisting of automatic sprinkler in certain areas, standpipes and hose stations.



A STEEL MANDREL drove concrete buttons (like one in center) for piles.



THE PIPE INSERTS that were used to protect the 18-ga. pile shells until concreted had to be jacked out because of pressure from boulders.

Hot water will be obtained by means of generators connected to the medium-pressure steam system and distributed through copper piping.

Other highlights of the hospital include three passenger elevators and one freight elevator, which will stop at all floors up to the eighth; two dumbwaiters for lifting food, and two others that will serve distribution rooms on the ground to eighth floors, inclusive.

Several contracts awarded

The principal construction contract for $6,918,000 is held by the Virginia Engineering Co., Inc., of Newport News, Va. It calls for construction of the main hospital building (276,266 sq. ft. of floor area and 3,436,266 cu. ft. of space); the station garage and maintenance shops (211,934 cu. ft.); attendants' quarters building (51,883 cu. ft.).

Four separate quarters buildings (165,000 cu. ft.) are being constructed by George H. Evans & Co., Philadelphia, Pa., under a contract for $318,965.

The pile foundations were constructed under a subcontract by the Western Foundation Co. Elevators and dumbwaiters were installed by the Otis Elevator Co. under a separate $236,375 contract.

The hospital is being built for the Veterans Administration by the U. S. Army, Corps of Engineers, under the direction of Col. E. E. Gesler, District Engineer, Philadelphia District. It was designed by Messena & duPont, Wilmington, Del., with Edwin Young, engineering consultant. L. H. Doane was the consultant on structural engineering, and Jaros, Baum & Bolles were consultants on mechanical installations.

Construction and planning is the responsibility of John P. Bateson, general superintendent, and L. B. Perrin, construction engineer, for the Virginia Engineering Co. The author is resident engineer for the Corps of Engineers.

CORRODED LINTEL emphasizes need for construction of weathertight walls and rust protection of steel used in building frames.

Leaky Walls Endanger Steel Buildings

Burtis Brown
Consulting Engineer,
Boston, Mass.

ADVANCED STAGES of corrosion in the steelwork have been discovered in buildings no more than 40 years old in Boston.

The origin of the trouble is in the leaky exterior walls of brick. Such corrosion could be called cancer of the building frame, and unless prompt action—often including extensive repairs—is taken, collapse is possible. In certain parts of the country the problem is serious enough that careful and competent engineering examination is warranted whenever telltale horizontal or vertical cracks are noticed on the outside face of a building. These cracks, in fact, indicate that corrosion in the hidden beams and columns has already reached serious proportions.

The situation is most frequently encountered in poorly-built buildings, usually of the speculative type, and in locations where low temperatures and driving rains are common. Such buildings and such climatic conditions are, however, numerous enough to make the corrosion problem one that engineers and building owners should respect.

The worst examples of corrosion have been found behind walls laid with thin mortar joints. Frequently joints are found without any mortar. Under such conditions, of course, the water of driving storms can easily penetrate the wall. Leaky flashings have also been the cause of some corrosion difficulties. Even the water of condensation from pipes encased in exterior walls can create a moist condition favorable to corrosion.

Shady side is trouble side

There is still another explanation for these corrosive conditions in locations where extremely cold weather occurs. Much of the trouble noticed is on the north and east sides of buildings, normally the shady sides. Here frost crystals frequently form in the outer course of brick. When warmer weather comes, these crystals melt, forming a damp condition for a long period. The same situation exists in areaways where the sun's rays seldom penetrate.

Too often, when cracks are discovered in a building wall, the owner thinks only a pointing job is necessary. Then again, owners have been wrongly advised by persons selling waterproofing preparations and various types of calking compounds, who recommend the use of their material to fill the cracks or joints. This process may slightly delay corrosion by keeping out a small amount of water, but the owner is thrown off his guard by thinking he has cured the difficulty, when he has only covered up the indication of trouble. Meanwhile, the expanding force of the increasing rust incrustations build up until the brickwork is badly ruptured.

Corrosion in an 11-story hotel

Several cases coming to the writer's attention emphasize the serious nature of the situation. In a 40-year old eleven-story hotel building with basement and sub-basement, wet walls were noticed in the rear stairwell. Masons were ordered to repoint the exterior walls of lightweight terra cotta blocks, but they were wise enough to know something was wrong in back of the blocks, and reported the condition. Engineers were ordered to make additional explorations, and to their surprise found that a man's fingers could remove the last remaining shreds of steel of a Z-bar column.

There were five stories of occupied hotel above this column section. The engineers ordered temporary shoring placed at once. The steel column had to be replaced and, Z-bar sections not being obtainable, an equivalent section of angle shapes was built up to replace the vanished portion—a very expensive operation because of difficulty of access to the column.

One of the unusual observations made was that steel was in perfect condition and shop marks readable within two feet of the completely corroded column section. Only where the lime and water from the wall lodged against the steel did corrosion take place.

Several years later a hurried call was received for an engineer to come to the sub-basement of this same building where there was some water leakage. Removal of the concrete fireproofing inclosing a steel column revealed cakes of rust $\frac{3}{4}$ in. thick, which when scraped away left only 40 percent of the column in sound condition. Calculations showed sufficient steel section remained to carry the loads, since the building had been designed originally with an excess live load allowance. But here again repair was costly.

Too-thin mortar joists

In a ten-story, 37-yr. old office building of the better class, long vertical cracks appeared on the rear wall above the sixth floor. Investigation showed some rust on the corner columns, but corrosion was not sufficiently severe to require any replacements of steel.

The trouble here was that the architect had made the mistake of allowing thin mortar joints, varying from $\frac{1}{2}$ to $\frac{1}{4}$ in. in thickness. Occasionally joints were found without any mortar, permitting a wire to be inserted for two

stretcher courses or 8 in. The amount of covering of brick over the steel varied at different columns. On some columns it was 4 in. and on others 8 in.

The front of the building and one corner were faced with limestone. No trouble has been observed on these walls.

Corrosion too great to repair

Because of leakage in the walls of an eight-story residential hotel investigations were made, and sizable cracks in the brick and terra cotta exterior walls discovered. Corrosion had progressed so far that masonry had spalled off at many columns, and rusty steel was exposed to the elements.

Here it was decided that the cost of protecting the steel was too great, and that the building would be torn down after five to ten years of additional use.

As a final example, in a large office building a group of mechanics had to work for over a year to repair the exterior steel columns and steel lintels by reinforcing them with steel plates. The corrosion of several lintels on the next to the top floor had proceeded so far that the wall had to be shored from the roof. The webs of the lintels were completely rusted away and only the flanges remained. New steel lintels were installed to replace these corroded members.

From experience on buildings such as these the author has developed certain principles and practice of protection. When the steel members have only a slight film of rust, cleaning with wire brushes will suffice. Where, however, the corrosion has progressed to the incrustation stage, the cakes of rust must first be knocked off, then the underlying scale removed by chiseling or, better still, by an electrically-operated steel brush. It is important to remove the last vestiges of rust, as a few remaining scales may begin building up rust patches again.

Cleaning and painting

Effective cleaning must, of course, be followed by efficient painting. The first coat should be a heavy application of red lead or a similar paint, followed by two additional coats of contrasting colors.

In place of the third coat of paint, however, there may be substituted a coat of asphalt or pitch one-eighth inch or more thick. It has been found that this material can be applied much faster by hand than with steel trowels, the workmen being equipped with rubber gloves.

Additional protection may be obtained by covering the column with asphalt-saturated cloth. This cloth prevents the mastic from drying too rapidly and keeps the masonry facing from damaging the new paint. The cloth also provides insulation against frost crystals.

In some locations, in lieu of paint, a rich mix of concrete, 2 in. or more thick, can be recommended as adequate protection.

The simplest way to replace the strength of a column lost by corrosion is, of course, to add reinforcing in the form of bars, plates, angles or channels. However, the designer should be generous in the selection of sizes of reinforcing members because the quality of the old steel is generally unknown. Probably, also, the actual load carried is doubtful. And finally, an allowance must be made for eccentricity, since members seldom deteriorate symmetrically.

If the steel is sufficiently corroded to require the replacement of an old and obsolete type member, a strengthening can usually be accomplished at least cost by using reinforced concrete. After the reinforcing rods and ties are placed about the original section, a rich mix and vigorous tamping or vibration should be used to assure a dense concrete.

A problem to be faced

The examples cited in this article are by no means all that have come to the author's attention. They should, however, be sufficient to establish the fact that corrosion threatens some of our more poorly-built buildings, and that no effort should be spared to detect and repair any existing or potential corrosive condition in any structure where it may appear.

The fact that some existing building frames are corroding should also emphasize the need for uniformly better construction on all new structures. What should be done may readily be reduced to a simple set of recommendations, which are presented in the following paragraphs:

1. Have the construction work done by a reliable contractor who knows his business.
2. Provide adequate steel and masonry inspection.
3. Use an exterior wall material with a low absorption coefficient.
4. Use dense mortar for the joints, and joints of sufficient thickness to give an adequate bed of mortar.
5. Have structural steel bonderized or parkerized or flame-treated to remove grease and dirt, then paint with three coats followed by parging with $\frac{3}{8}$ in. of mastic and a covering of asphalt-saturated cloth.
6. Place masonry carefully so as not to damage the steel protection.
7. Require a section in each building code stipulating adequate protection for all primary-frame steel that is to be built into exterior masonry walls.

Plane Advances Affect Airport Design

New technological developments in the construction of airplanes will require a much closer association between the aeronautical engineer and the civil engineer who builds airport facilities for the planes, U. S. and Latin American engineers were told recently.

Addressing the first Pan-American Engineering Congress at Rio de Janeiro, Robert L. Champion, now professor of airport design at the Aeronautical Institute of Technology at Rio de Janeiro, pointed out that such developments as the cross-wind landing gear, tractor type landing gear, faster loading and unloading of planes will have a considerable effect upon the design of the airports.

On the other hand, certain new developments in civil engineering, such as prestressed pavements for runways and other matters, would require cooperation from the aeronautical engineer for best general results.

"The economic implications of cross-wind gear development are clear," Mr. Champion said. "For illustration let us examine a typical 60 deg. single runway pattern, with its three runways requiring an area of 770 acres and providing a maximum capacity of 40 operations per hour. Utilization of cross-wind gear might eliminate two of the three runways, with a saving of two-thirds of the projected runway and taxiway cost and a reduction of the required acreage by more than half. A typical 30 deg. tangential pattern with twelve runways needs 4,550 acres to handle its maximum load of 360 operations per hour. The utilization of cross-wind gear might permit the same number of operations with six runways, or perhaps even four.

The cross-wind gear is not the only development tending to reduce runway cost. For some types of operations, the caterpillar landing gear may eliminate paved runways entirely. Also, reversible pitch propellers and auto-feathering propellers can affect runway length, since the great reduction in the amount of space necessary for bringing the aircraft under control once it has touched the ground.

"Other improvements in handling baggage and passengers will have an effect upon paving costs and maintenance of airports."

HIGH FRAGMENTATION with low shock was wanted in demolishing rock in the way of a power plant expansion at Beauharnois, Que. Demolition was done using short delay timing for minimum dangerous shock and reduced throw from the rock-face.

Millisecond Delays Take the Blast out of Blasting

BLASTING 25,000 tons of rock in the shadow of an operating power plant would ordinarily be a tedious, risky job. But Beauharnois Light, Heat and Power Company did that job for a plant addition near Montreal in just two blasts—using millisecond delay timing.

This blasting technique has proved its worth in strip mining and quarrying operations since its introduction four years ago. Its chief advantage—higher fragmentation with less shock and noise—proved equally useful on this construction job, and the result was a quick and safe operation.

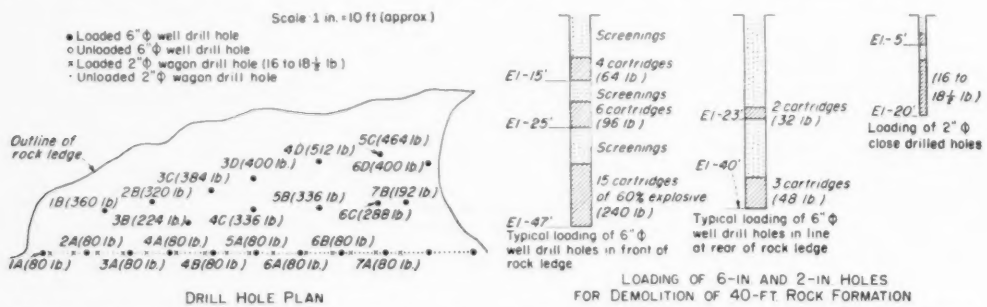
The requirement was to remove 1,200,000 cu. yd. of rock from a 40-ft. high rock formation where foundations are to be built for future units of the St. Lawrence River plant. By timing 21 individual charges milliseconds (25 thousandths of a second) apart, fragmentation greater than that of an equal charge shot instantaneously was achieved. Shock waves from the first explosion, traveling ahead of subsequent blasts, set up stresses in the rock and caused thorough disintegration. Also, noise and concussion of the 21 slightly separated blasts was far less than if all had been exploded simultaneously. Throw from the rock-face was greatly reduced by short-delay timing, thus protecting adjacent and overhead structures. Finally, the blasted rock was piled high right at the rock-face ready for easy removal.

Small holes supplement large

Well-drill holes of 6-in. dia. were sunk in the rock ledge as shown on the accompanying plan. Those along the straight line at the back of the ledge were drilled on 10-ft. centers to a 40-ft. depth and had 2-in. dia. wagon-drill holes spaced between them at 1-ft. centers. The wagon-drill holes went down but 20 ft. and 15 of them (there were 80) were loaded with from 16- to 18½-lb. charges. All other holes were loaded as indicated on the plan and as detailed in the sectional drawings. It will be seen that well-drill holes forward of the rear line were 47 ft. deep and held heavier charges—ranging from 192 to 512 lb.

Measurement of shock waves were not made on these two blasts. But observations made on earlier millisecond delay blasts by the power company indicates far smaller vibration intensities than those of instantaneous shots. (Manufacturers of short-delay detonators claim seismograph tests show their method cuts vibration to one-third—charges being equal.)

Angus-Robertson Ltd. is contractor on the excavation project; L. P. Cousineau is engineer for the contractor. Canadian Industries Limited advised on the blasting technique used.



FIRING SEQUENCE is indicated by hole numbering system. Seven groups of holes were shot at 25 millisecond intervals. Six-inch holes in the rear line went down 40 ft; those forward were 47 ft. deep. Small holes 20 ft. deep; 15 of 80 were loaded.

FIELD AND OFFICE

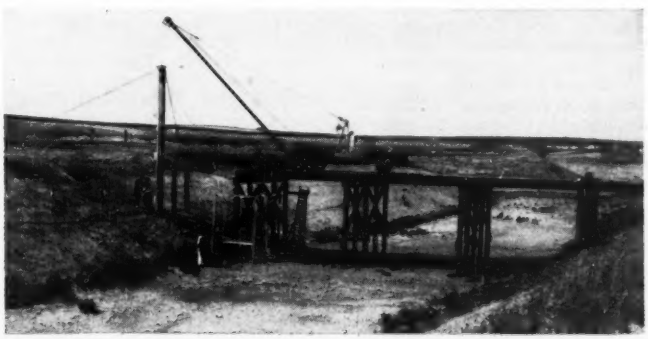
BLASTING WIRE SPOOLED the easy way, using an old truck generator powered by a 12-v. battery.

Neat Method of Spooling Blasting Wire

Electric power replaced hand power in rewinding blasting wire at Squirrel Hill Tunnel on the Penn-Lincoln Parkway in Pittsburgh, Pa. The 14-ga. copper wire came in 200-lb. loose rolls. It was wound into 50-lb. spools—for handy access by the blasting crew—on an ingenious "Rube Goldberg" contraption, in lieu of the ordinary hand-winding method.

Two angle irons welded upright to a base plate formed the supporting frame for the spool. Motive power for rotating the spool was furnished by an old truck generator driven by a 12-v. truck battery, with a V-belt drive between generator and spool. The reduction ratio of generator spindle to flange of spool gave sufficient power to wind the wire, while speed of rotation was slow enough to permit smooth winding. Workman guided the wire onto the spool with one finger, while keeping one foot on the generator to maintain proper tension in the driving belt. The copper wire was run from the 200-lb. coil, laid flat on the floor, through an eye-bolt in a rafter directly above the workman, and down onto the spool.

No estimate was available of the man-hours of labor saved by this mechanized and electrified method of spooling the blasting wire on this tunnel-driving project of B. Perini & Sons, Inc., and associates.



PILE DRIVER LEADS suspended from a truck-mounted boom are used to drive piles for timber bridges crossing canals of the St. Mary-Milk River irrigation project in Alberta, Canada. Doncaster Construction Co. Ltd. decked each span as soon as a pile bent was driven to provide a working platform for the truck.

Chain Fall on Truck Speeds Placement of Septic Tanks

Setting a 1,400-lb. concrete septic tank is a one-man job for Ed Apsden, an Erie, Pa., machinist with a flair for doing things the easy way.

For his spare-time job—hauling septic tanks, Apsden has devised a special rig on his four-wheel-drive pickup truck. The rig consists of a channel-iron frame rising seven feet above the pick-up body, fitting into the stake pockets of the truck. To accommodate a 4-wheel dolly and half-ton chain fall, a 10-ft. monorail is suspended from the center of the frame, extending four feet beyond the body of the truck. Two steel-pipe telescoping legs are used to brace the projecting monorail when under stress during loading and unloading.

CONCRETE SEPTIC TANKS weighing 1,400 lbs., are hauled to location and lowered into the ground by one man with monorail unloading rig. (Willys-Overland Motors, Inc. photo).

Apsden estimates that he has invested about $100 in materials in building the special rig for his Jeep truck. Construction of the unusual rig principally by welding, took about 25 hours of the machinist's spare time.

More of his spare time, at four dollars an hour, is now being used in delivering septic tanks within a radius of 50 miles of Erie. The 4-wheel-drive feature of the truck makes it possible for Apsden to make on-the-sopt delivery of the bulky septic tanks despite the rough terrain, muck, and water frequently encountered in this type of work.

DEVELOPMENTS ABROAD

BOMBED BRIDGE REOPENED. This new 1,936-ft. bridge over the Po River at Piacenza, 42 miles south of Milan, was reopened recently by Italy's President Luigi Enaudi. The original bridge was one of 3,000 Italian bridges destroyed during the war. Already 2,900 bridges have been rebuilt. For this bridge 1,700 tons of steel were used. (Wide World Photo)

ECA aid for Austria

Release of 388 million schillings ($38,800,000) from the Austrian counterpart fund for industrial and agricultural development and housing has been announced by the Economic Cooperation Administration in Washington.

Of this amount, 70 million schillings will be used for hydroelectric power projects, 69 million for agricultural improvement, 50 million for railroads, 110 million for industrial expansion, 30 million for housing, 15 million for tourist facilities, 14 million for forestry and woodworking projects and 30 million for other governmental investments.

Funds released for agricultural improvement will finance drainage, irrigation and erosion control measures, and will permit the increased use of fertilizer, the consolidation of fields, and the building of roads and cableways to inaccessible farming areas.

The railroads will use 15 million schillings for reconstruction of war-damaged equipment, 20 million for the purchase of new equipment, and 15 million for power plants.

Of the 110 million schillings made available for industrial expansion, 31.97 million will be used in the iron and steel production and processing industries; 19.85 million for the chemical industry; 16.47 million for the pulp and paper industry; 15.83 million in the electrical manufacturing field; 9.35 million for the textile industry; 6.7 million for food processing; 5.8 million for nonferrous metals industries; 3.15 million for the building materials and construction equipment industry; and 0.9 million for the glass industry.

The 30 million schillings released for housing will include construction of homes for industrial workers at Salzach, St. Stefan, Ranshofen, Beiberg, and Linz.

Funds released for tourism will finance the reconstruction of hotels and other public lodgings.

Counterpart funds are the foreign currency equivalents of ECA dollar grants to participating countries. The funds accumulate as citizens of each country buy goods and services furnished to their government under the European Recovery Program. The foreign currency is held in special accounts for industrial, agricultural and other recovery projects within the country and is released periodically with the approval of ECA.

"Stuyvesant Town" for Rio de Janeiro

Rio is going to have low-rental housing developments, something like New York's "Stuyvesant Town."

First such project, called "Conjunto Residencial Pedregulho" (Pedregulho Residential Development) is going up in the Sao Cristovao district, breaking the monotony of factories and poor residences there.

Like others scheduled to follow, it is intended primarily for low-salaried municipal government workers whose jobs are nearby. A survey by the city government's Department of Popular Dwellings, which is executing the work, disclosed the need for at least 560 habitations in the development, to house about 2,400 persons.

Begun in 1948, the first Pedregulho apartments are to be open by July, 1950. Those are to be four-story buildings, each containing 28 duplex apartments. Some will have four bedrooms on the upper floor, some two with bath. The lower floor will have entrance hall, living-dining room, veranda and kitchen.

A much larger apartment block, seven stories high, is projected, to contain both duplex apartments for families and one-room apartments for bachelors.

The building will contain no elevators, but its third floor (which will be used mostly as a children's play area), will be reached by ramps from the hillside behind it; thus the maximum climb upstairs will be four stories.

Still another apartment block will be 12 stories high, with two elevators in a shaft separate from the building and with connections by ramps. All are to be duplex apartments with two bedrooms.

Most of the buildings are to be on pillars, providing protected areas for children and mothers and at the same time permitting free circulation of air and movement of pedestrians.

All construction will be of reinforced concrete. Total area of the property is 563,133 sq. ft.

Total construction expense was estimated originally at about 40-million cruzeiros (approximately $2,000,000), but rising costs may carry it higher. Rentals will be low, but have not yet been set.

The architect is Affonso Eduardo Reidy, director of the city government's Department of Urbanism.

Foreign Briefs

Lebanon Airport—Six American engineers have been building a large airport for the Lebonese government at Beirut. They have been there for three months and will return home soon, leaving native engineers and laborers to finish the job. The engineers, who are veterans of construction in the Panama Canal Zone, are: Chief Engineer Charles M. Brandl, Asheville, N. C.; Claud Campbell, Philadelphia, Pa.; Norman Fransun, Cloquet, Minn.; Parce Roland, Shreveport, La., and Preston Barker, Tampa, Fla.

Natural Rubber—The Natural Rubber Bureau has been established by the rubber growers of southeast Asia to develop the market for natural rubber in the United States, by publicizing the advantages of natural rubber as a raw material and such new uses for it as latex foam cushioning and rubber roads. The Bureau will have offices in the U. S. at 1631 K Street, N. W., Washington, D. C. Warren S. Lockwood is director.

(*Continued on page 50*)

The Labor Union Monopoly Bites *ALL* Workers

What kind of government is it which:

. . . Prosecutes the Great Atlantic & Pacific Tea Company which it asserts handles about 6½% of the retail food distributing business as an illegal monopoly in restraint of trade, and

. . . Seeks to break up four big meat packing companies and make them into 14 companies, charging the four with being a monopoly in restraint of trade, but

. . . Makes no move whatsoever to apply the federal anti-trust laws to the exercise of virtually 100 percent monopoly control of labor in the coal industry, and the only slightly less complete monopoly control of labor in the steel industry?

The answer to that question is simple. It is class government of the most flagrant type, a government by which special privileges are dispensed without justice and to the great injury of all workers. It is the kind of government which will lead to the early sacking of the American enterprise system and the personal freedoms of workers.

In legal terms the explanation of this flagrant affront to good government is also simple. In 1932 labor union activities were given virtually complete exemption from the application of the federal anti-trust laws by passage of the Norris-LaGuardia Act.

continued on next page

When the Norris-LaGuardia Act was passed labor unions were relatively weak. Only about 16% of the nation's industrial workers were organized, only about 12% of the steel workers. About two-thirds of the coal miners were union members, but only half that number were paying dues. The country was in the depth of its worst depression. The unemployment of about one-fourth of the labor force made monopoly control by labor seem so remote as to be almost fanciful.

But after only seventeen years devoted to the promotion of labor union organization by the federal government, we have labor monopoly with us. In its power and scope it makes the alleged business monopolies being prosecuted under the federal anti-trust laws seem positively piddling. In its manners it makes the old-time business monopolists look like Lord Fauntleroys.

What is lacking, grievously lacking, is action by Congress; action to shape our federal anti-trust laws to take account of the labor monopoly that has become the dominant national force in our country today—a force that is leading to the loss of freedom of all workers.

Before labor monopoly is broken up, as it must be broken up if our economy is not to be permanently wrecked, other steps will no doubt be required. But one test more than any other will be the touchstone of the nation's determination to keep its economic and personal freedom. It is what it does to see that labor monopoly receives the same treatment under the federal anti-trust laws as any other kind of economic monopoly.

The purpose of the federal anti-trust laws is to break up monopoly and preserve fair competition in the United States. It is a fine purpose. The wisdom and fairness of its application in particular cases is often open to challenge. But in spite of bad administration every farsighted business man I know is a staunch defender of our national anti-trust policy.

At present, in the exemption of labor monopoly, we have a breach in that policy which, if not closed, will soon become fatal both to the policy and the enterprise system it is designed to foster and protect.

The main thing wrong today with Great Britain and indeed all Europe is that no effective anti-trust laws are in existence to protect the public from business and labor monopolies, to guarantee personal freedoms. No free economy in Europe or America can prosper as long as protected monopolies remain and flourish.

While your representatives in Congress are home with you talk to them about the special privileges now granted to labor union monopoly. You would serve your country well by finding out what they intend to do about it before it is too late.

President, McGraw-Hill Publishing Company, Inc.

The "Great Gildersleeve"*

. . . THROWS CURVES AT WATER CONSUMERS

Chester Conklin, former meter reader (now promoted to maintenance) watches wistfully as new Meter Readerettes salute The Great Gildersleeve before starting out to read 'em.

Hydrants present a tough hurdle. "This doesn't look like the meter Mr. Gildersleeve showed us . . . but maybe it's the large economy size."

"I wonder what they mean by a curb meter? It just says here: 'Unscrew the disaflous, then the samastrope will be in plain view'." (The gal can't even read the manual.)

But seriously speaking, you can always read Pittsburgh-Empire meters and profit from their accuracy.

Next month Gildy finds out the girls can't read meters either—

Avoid COSTLY ERRORS

Save Time and Money

You'll find

THE DAVID WHITE UNIVERSAL LEVEL-TRANSIT

IS THE MOST PRACTICAL ALL-AROUND CONTRACTOR'S INSTRUMENT YOU'VE EVER HANDLED

YES, you'll be time and money ahead if you use a David White Universal Level Transit in connection with all your survey and checking operations — your building and road construction. It is a low-cost, extremely accurate, amazingly rugged instrument. It quickly converts from level to transit. It's designed to provide maximum strength and protection to all parts — assuring you constant precision over long periods of use.

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FOREIGN DEVELOPMENTS

(*Continued from page 46*)

Low-rent Housing—President Truman has allocated funds permitting the Public Housing Authority and the Ponce Housing Authority in Puerto Rico for the construction of over 4,000 low rent housing units, with a total value of $662,800. Of this amount $402,800 will be used for low-rent housing in San Juan. The funds allocated will be used during the first two years of the federal housing program in accordance with the act recently approved by the U. S. Congress.

Railroad Terminals—The government-administered National Railways of Mexico, Manuel R. Palacios, general manager, announces plans for spending $45,000,000 for the building of passenger and freight terminal depots in the valley of Mexico, in which Mexico City is situated. Most of this outlay, $32,000,000, will be by private interests and the rest by the company, Palacios revealed. Private interests will get freight reductions for providing stations. Plans call for eliminating some antiquated stations and erecting modern buildings on other sites. Palacios indicated that this program will start shortly after the first of the year.

Irrigation in Turkey—The Turkish Government is planning the formation of an independent self-supporting enterprise, responsible for execution of irrigation and land reclamation projects in Turkey. A new law, designed to bring this agency into being, has been submitted to the Turkish National Assembly.

Ball Bearings—SKF Industries, Inc., of Philadelphia, Pa., has received an order for 23 tons of anti-friction bearings to be installed in a hot strip mill in France's Lorraine iron ore basin. The order was placed by United Engineering & Foundry Co. of Pittsburgh, which will construct the mill for the Societe Lorraine de Laminage Continue (Sollac). It calls for 76 spherical roller bearings weighing a total of 45,756 lb. for the mill's drives and pinion stands. The bearings range in size from two to three ft. in diameter and weight from 459 to 1,342 lbs. apiece. Consulting SKF engineers said the 55,250 horsepower required to operate the continuous mill and transmitted through the roller bearing-supported drives and pinion stands is sufficient to supply enough electric power needs for a city of 75,000 population. U. S.-built equipment for the French mill is being financed by the ECA.

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Switch to Federals and cut operating costs to the bone.

PUT YOUR MONEY INTO A TRUCK THAT REGULARLY DELIVERS THE GOODS!

Record breaking performance under the toughest of schedules and operating conditions . . . low cost-per-mile of operation . . . minimum time out for maintenance . . . these are not idle claims . . . they are what you get when you buy powerful Federal Trucks. And they all add up to bigger and more profitable payloads.

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Takes tons of trouble off your hands

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Once you see this belting in action, you'll understand why thousands of other wide-awake engineers specify Hewitt for all their belting needs.

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You can get Hewitt Belting for all of your needs: Maltese Cross for the really tough jobs, Ajax for general service, and Conservo for lighter applications and portable conveyors. Remember, too, that Hewitt-Robins is the only firm that offers you single responsibility for your entire belt conveyor system.

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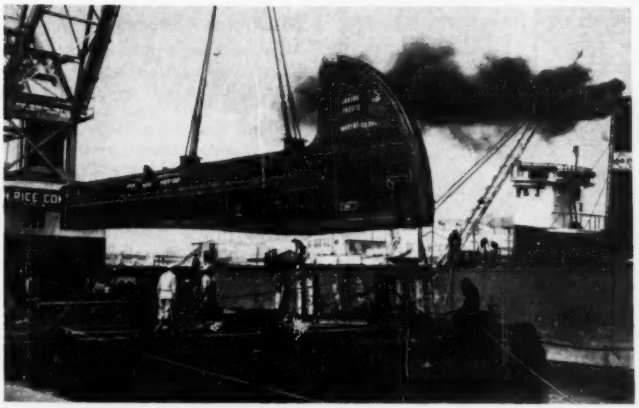
MUNICIPAL AFFAIRS



DERRICK BARGE hoists 42-ton steel girder into place on Islais Creek bridge in San Francisco. This girder and two others like it will support the north half of the double-leaf bascule bridge expected to be in service by February. Duncanson-Harrelson, Richmond,Calif., holds the $1,250,000 bridge contract.

Extensive Chicago Housing

Seven sites, comprising 656 acres, have been designated by the Chicago Housing Authority for the construction of 9,990 dwellings with federal financial help as provided by the Housing Act of 1949.

This is the first group of the 21,000 low-cost housing units approved for Chicago last summer by Washington.

CHA announced that 5,020 of the units would be built on unimproved land. Construction could start next spring, according to CHA, if the City Council approves the sites promptly. The remaining 4,970 units would be built in slum areas.

Toledo Improvements

Among the capital improvements proposed by the heads of the various city departments and commissioners of Toledo, Ohio, and some of their cost estimates are the following:

Repairs and improvements on the Fassett St. and Cherry St. bridges, $270,000; a new health center, $300,000; Union State plaza, $130,000; street improvements, $300,000; a new water main for the West Side; incinerator, $500,000; completion of McCarthy Stadium; and replacement of 650 parking meters and purchase of 500 additional ones.

Vancouver Civic Center

A $6,000,000 auditorium-theater television center will be under construction in Vancouver, B. C., next year, Mayor Charles Thompson predicts. The mayor made the announcement, in conjunction with chairman Hugh A. Martin of the civic auditorium committee. He added that the project should be completed in 1951.

Housed in the building will be three main units—a $1,900,000, 10-story library building; a $1,450,000 auditorium and a $720,000 little theater; and a $520,000 radio and television center and restaurant.

A 500-car parking lot will be beneath the building.

Electric Pumps

The waterworks facilities of Evanston, Ill., Chicago suburb immediately to the north, are now all electrified with the replacement of old steam pumps with new electric ones.

The five new pumps have a total capacity of 74,000,000 gpd, compared with the 65,000,000 gpd. of the five old pumps, three of which were operated by steam and two by elecricity.

Horace R. Frye, waterworks superintendent, said that two old electric pumps will be overhauled and used to supplement the new equipment. The steam pumps will be junked.

New cables were laid last summer along the lake front to the new pumping station. New mixing and settling basins, built as part of the $3,000,000 waterworks expansion program started two years ago, have been used since last spring.

S. N. Nielsen Co. is building a new filter plant, the final step in the im-

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PILE HAMMERS

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For double driving power on less steam, choose Super-Vulcan.

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Every Scheduled Airline carries Air Express. Frequent service—air speeds up to 5 miles a minute! Direct by air to 1300 cities; fastest air-rail to 22,000 off-airline offices. Use it regularly!

Only Air Express gives you all these advantages

Nationwide pick-up and delivery *at no extra cost* in principal towns, cities.

One-carrier responsibility *all the way;* valuation coverage up to $50 without extra charge. And shipments always *keep moving.*

Most experience. More than 25 million shipments handled by Air Express.

Direct by air to 1300 cities, air-rail to 22,000 off-airline offices.

These advantages make Air Express your best air shipping buy. Specify and use it regularly. For fastest shipping action phone Air Express Division, Railway Express Agency. (Many low commodity rates in effect. Investigate.)

SPECIFY AIR EXPRESS
GETS THERE FIRST

Rates include special pick-up and delivery door to door in principal towns and cities

AIR EXPRESS, A SERVICE OF RAILWAY EXPRESS AGENCY AND THE SCHEDULED AIRLINES OF THE U.S.

provement program financed through a bond issued to be retired with revenue from the sale of water.

Municipal Notes

Work will begin soon on the downtown railroad track relocated program at Buffalo, N. Y. It will cost $4,104,021. New York State has sought to start the project for nearly a year but until now contractors, suffering shortages of men and materials, have refused to submit bids. Two years will be needed to complete the project.

A smoke prevention clinic to aid New York City, and particularly owners of large buildings, in combatting the smoke nuisance has been established at Anthracite Institute, 101 Park Avenue. The clinic is staffed by ten engineers experienced in smoke prevention and especially in advising building managers and municipal authorities. The engineers, equipment, and data, including lists of commercial consulting engineers and equipment manufacturers, are available without cost to New York building owners and managers.

More than three years ago Oyster Bay, N. Y., received a windfall of $1,500,000 from a wartime industrial levy on plants in its area. The money has been kept invested in U.S. bonds paying about $13,000 a year to the town. Now it is announced that an extensive program of improvements in the 100-square-mile township has been mapped out. The major projects will be at Tobay Beach and Theodore Roosevelt Memorial Park in Oyster Bay, Stehli's Beach on Long Island Sound near Bayville, Centre Island Beach on the causeway from the mainland, and Beekman's beach at Mill Neck. By 1951 it is expected that Oyster Bay will be entirely out of debt.

The Air Pollution Control Board of Niagara Falls, N. Y., will be given authority over industrial discharges into city sewers as a means of reducing gas damages, it was decided by the city council. Approving in principle the board's request for control over sewers, the council directed the city corporation counsel to revise the present air pollution control ordinance to effect the change.

The City Planning Commission of Cleveland, Ohio, has formally approved its $187,000,000 six-year capital improvement program. Urban rehabilitation and slum clearance would be included in the program later, when legal questions have been answered.

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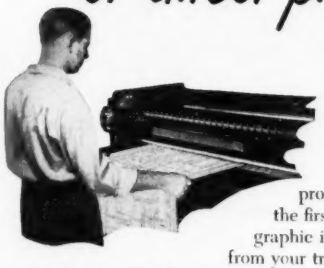

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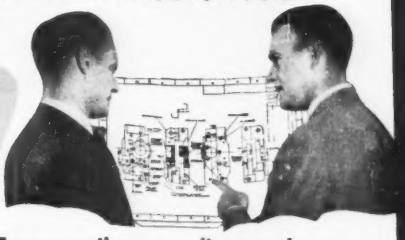

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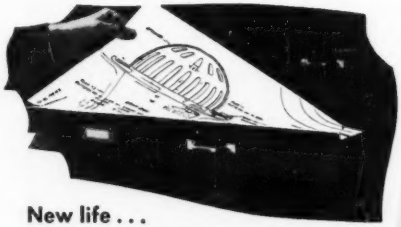

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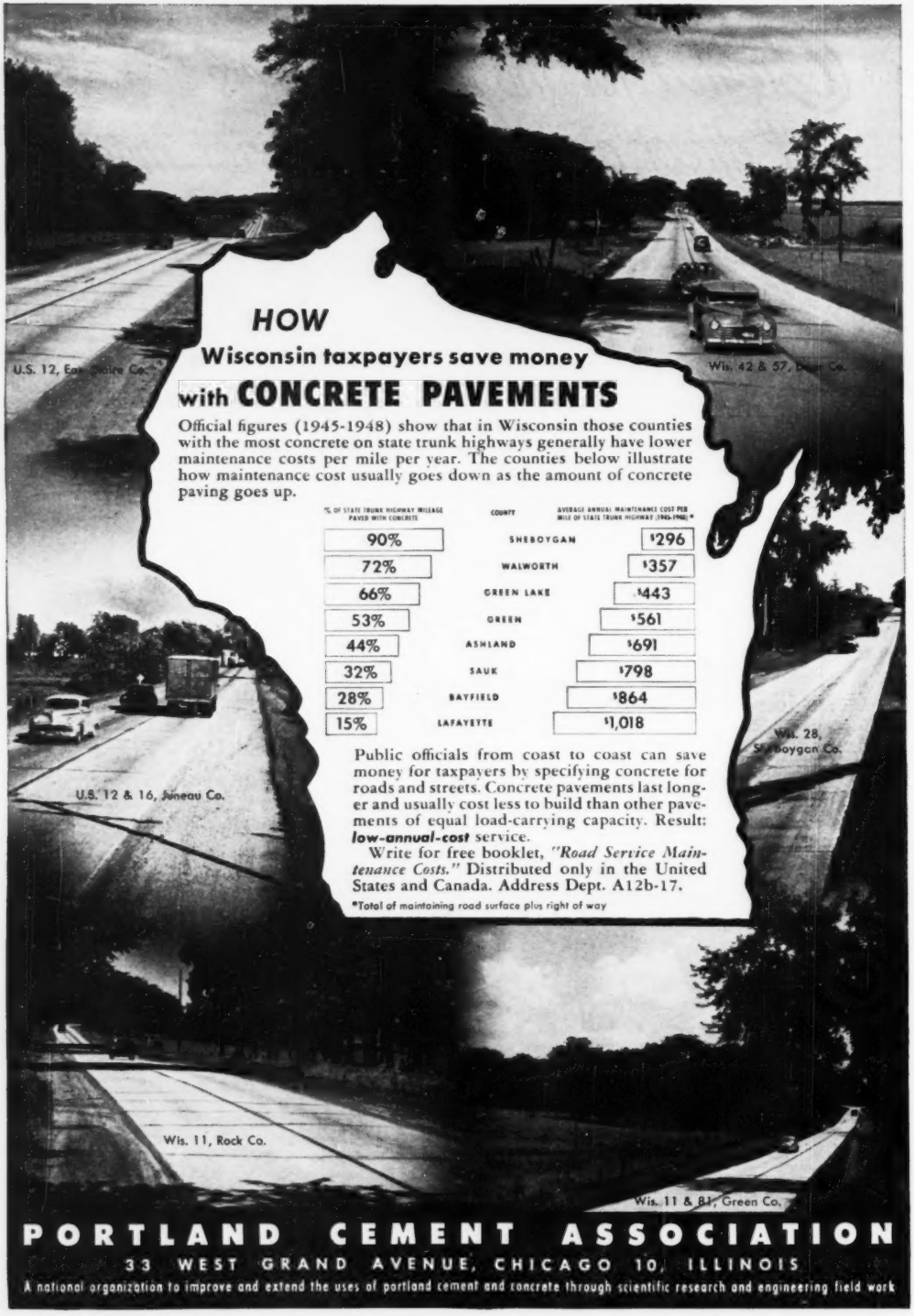

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Wisconsin taxpayers save money with CONCRETE PAVEMENTS

Official figures (1945-1948) show that in Wisconsin those counties with the most concrete on state trunk highways generally have lower maintenance costs per mile per year. The counties below illustrate how maintenance cost usually goes down as the amount of concrete paving goes up.

% OF STATE TRUNK HIGHWAY MILEAGE PAVED WITH CONCRETE	COUNTY	AVERAGE ANNUAL MAINTENANCE COST PER MILE OF STATE TRUNK HIGHWAY (1945-1948) *
90%	SHEBOYGAN	$296
72%	WALWORTH	$357
66%	GREEN LAKE	$443
53%	GREEN	$561
44%	ASHLAND	$691
32%	SAUK	$798
28%	BAYFIELD	$864
15%	LAFAYETTE	$1,018

Public officials from coast to coast can save money for taxpayers by specifying concrete for roads and streets. Concrete pavements last longer and usually cost less to build than other pavements of equal load-carrying capacity. Result: ***low-annual-cost*** service.

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*Total of maintaining road surface plus right of way

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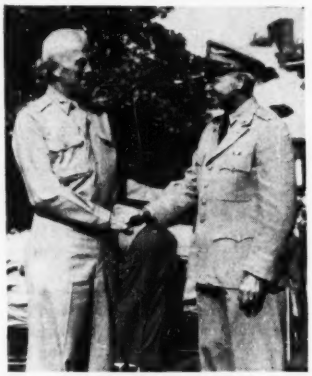
MEN AND JOBS

Horton W. Hughlett, former bridge superintendent in the maintenance department of the Oregon State Highway Commission, has been promoted to office bridge engineer to assist the maintenance engineer in contact with division and district offices and bridge crew operations in the field.

Charles F. Palmetier, formerly in the Washington, D. C., office of the Commissioner of Reclamation, has been appointed office engineer at the Bureau of Reclamation's Hungry Horse project on the South Fork of the Flathead River, Montana. He succeeds **David S. Culver,** recently made assistant construction engineer on the project. Mr. Palmetier, a civil engineering graduate of the University of North Dakota, has been with the bureau since 1933. Following five years in the chief engineer's office in Denver, he transferred to the Elephant Butte power plant construction job on the Rio Grande project in New Mexico. He also has worked on the Minidoka project in Idaho and on the Parker Dam project on the Colorado River between Arizona and California.



Col. F. F. Frech, left, congratulates Col. Earl E. Gesler, his successor, Philadelphia District engineer for the Army Engineers. Colonel Frech has been assigned to First Army Headquarters, Fort Jay, Governors Island, N. Y. This photo was taken at the recent farewell outing given by the Philadelphia District employees in honor of Colonel Frech at old Fort Mifflin on the Delaware River.

W. L. Foss, right, and R. B. Wells discuss progress of earth fill work on St. Mary Dam of the St. Mary-Milk River irrigation project in Alberta, Canada. Foss is project engineer and has worked on project planning and construction since inception of the work in 1938. Wells is acting resident engineer. Project is administered by the Prairie Farm Rehabilitation Administration of Canada's Department of Agriculture.

M. D. Thompson, engineer in the office of the vice-president and chief engineer, Illinois Central System, Chicago, has retired. He was graduated in civil engineering in 1902 from the University of Illinois and joined Illinois Central that year. He became assistant bridge engineer of the Chicago Great Western railroad and bridge engineer for St. Paul, Minn. He returned to the Illinois Central in 1913 as resident engineer handling track elevation and bridge reconstruction at its Chicago Terminal. His assignment involved rebuilding 12 subways carrying eight main tracks, with 500 trains daily. He served Chicago as engineer of design for the proposed subway system, on loan from the Illinois Central in 1930. Since 1931 he has been engineer of design and special engineer for the Illinois Central.

David Browning, Stansel, N. C., State College engineering graduate from Robeson County, N. C., has been appointed job analyst for the North Carolina Highway and Public Works Commission, serving in the office of J. P. Dodge, administrative assistant and personnel director of the highway commission.

Col. B. R. Wimer, civil engineer and executive officer of the Division Engineer for the South Atlantic Division, Corps of Engineers, Atlanta, Ga., has been ordered to new duties at Washington, D. C. He will be with the Director of Installations, office of Deputy Chief of Staff, U. S. Air Force. Colonel Wimer has served as executive officer in Atlanta since his return from Japan in 1947.

Wilmer Z. Betts, former director of the North Carolina State Division of Purchase and Contract, has been appointed manager of the N. C. State College Coliseum. An engineering graduate of the college, Betts worked for the North Carolina Highway Department as a bridge designer from 1919 until 1923 when he became purchasing agent for the commission. He was named director of the Division of Purchase and Contract in 1941 and held the post until he resigned July 1. The coliseum which is nearing completion, cost more than $2,000,000 and seat 12,000.

Lieut. Commander Leo F. Crowley, CEC USNR, a veteran of both world wars, is the new national president of the Seabee Veterans of America. He has been employed for the last 30 years in the city engineer's office of the Department of Public Works in Detroit. During the war he served with the 81st Construction Battalion in Europe and later was maintenance officer at the Naval Air Station, Patuxent River, Md.

D. H. Barmore is city engineer of Luverne, Minn.

A. E. Suro, planning director of Dade County, Fla., has been appointed planning director for Mahoning County, Youngstown, Ohio. **William B. Swanson,** St. Louis, was appointed associate county planner. Suro succeeds Arthur J. Reed. Swanson will also work with the county engineer's department.

Stephen Schackle, an employe of the Iowa State Highway Commission for 31 years, has been named a District 2 resident engineer with headquarters at Mason City.

G. Clayton Hill, who has been chief city building inspector at Winston-

(*Continued on page 58*)

LOWER JOB COSTS!

INCREASED EFFICIENCY!

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HERMAN NELSON
Economy Model
Portable Heater

- **Provides Quick, Clean, Safe Heat — *without* smoke, soot, or open flame!**
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Burns kerosene — costs but 19c per hour to operate!

125,000 BTU per hour capacity — enough to heat two ordinary five-room houses!

Electric motor powered; 115/230 volt, 60 cycle, single phase.

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Small, compact, light weight.

Wheels optional.

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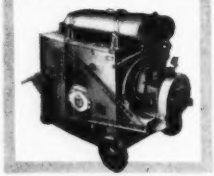

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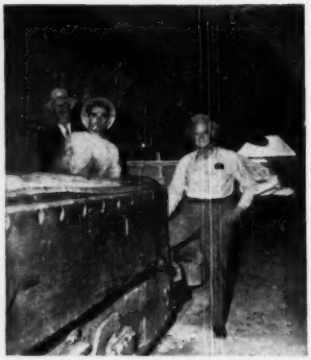


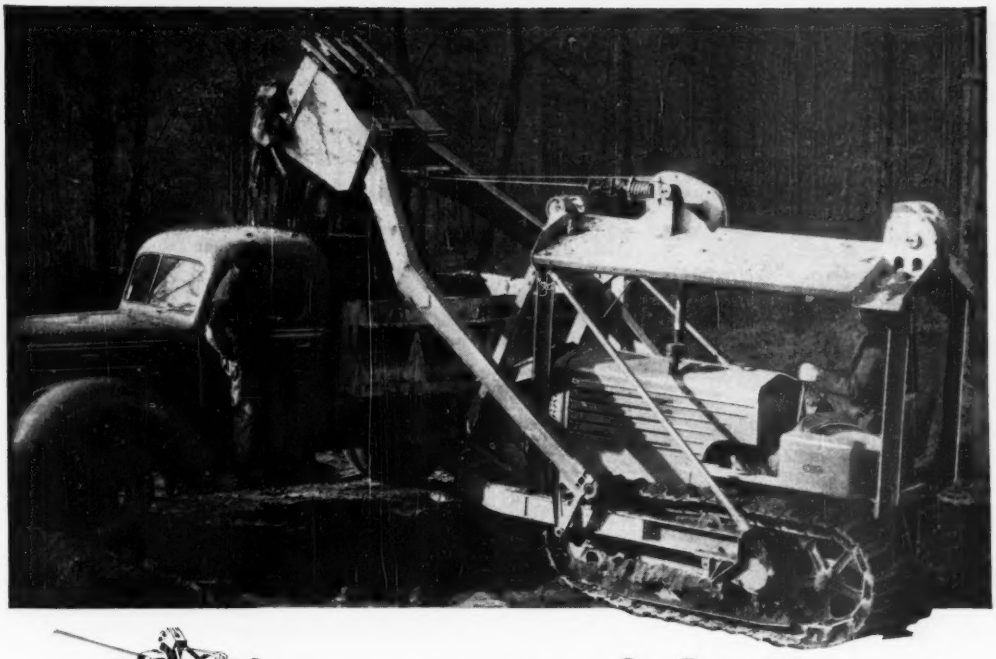
Contractor Guy F. Atkinson, left, Guy F. Atkinson Co., contractors; locomotive operator, center, and H. A. Van Norman, Los Angeles Department of Water and Power consulting engineer, shown in one of three tunnels at the Owens River Gorge hydroelectric project. The combined tunnel length is 12 miles. The tunnels are 10 ft. in dia. Guy F. Atkinson Co. was one of a syndicate of contractors awarded the $8,947,520 contract last May. The first tunnel—10,400 ft. long—is to be completed by Oct. 1, 1950.

Salem, N. C., for the last 14 years, has been relieved of his duties to streamline and revise the city's building code to meet modern building needs. He also will serve in a consulting capacity with various city departments. W. S. Fitzsimmons, who has been with the building inspector's office for the last year, has been named to succeed him as chief building inspector. A graduate of The Citadel, he worked as an estimate and construction engineer prior to World War II when he served as a major in ordnance. After the war he took postgraduate work in architectural engineering at Clemson College before going to Winston-Salem.

David S. Stoner and **William I. Gardner** of the Federal Bureau of Reclamation Office, Sacramento, Calif., are in Formosa at the request of the Nationalist Chinese Government to find new sources of ground water to be used in growing sugar cane. Mr. Stoner, a hydraulic engineer who has engaged in similar research in Turkey and Greece, and Mr. Gardner, a geologist, are each on a six months' leave of absence.

The Asphalt Institute has appointed **Arvin S. Wellborn**, formerly with the U. S. Navy, Bureau of Yards and Docks, as managing engineer of the Pacific Coast division with offices in San Francisco, Seattle and Los Angeles.

(*Continued on page 60*)



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This unit crowds *directly* back in digging or loading . . . moves *directly* forward to load out trucks. The shovel arms swing *directly* over the tractor. Contrast this fast action to ordinary loaders where the tractor must crowd into the pile . . . back out . . . turn around and travel to truck or dumping pile. Easy to see why jobs move so much faster . . . why you can really cut costs!

And, the Basic Overhead unit can be quickly and economically converted to a Backhoe, Bulldozer, Pipe Handler, or Log Loader . . . a complete crew at a fraction of the cost of combined individual units.

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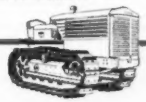

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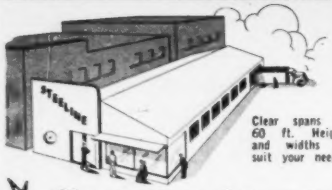

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- All steel construction for fire safety, long life and low maintenance.
- Standard designs for buildings and accessories are flexible to meet most requirements.
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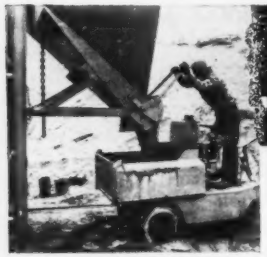
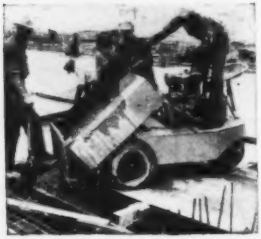


Turns on a dime, backs into loading position under mixer discharge . . . loaded and ready to go in a jiffy!



Neatly balanced bucket body lifts easily for fast discharge of load — Wisconsin Engine does the heavy work of hauling.

FASTER DELIVERY from MIXER to FILL with this "CONCRETE CART!"

It's WISCONSIN-Powered!

This modern "Concrete Cart" built by Modern Welding & Mfg. Co., and powered by a Wisconsin Heavy-Duty Air-Cooled Engine, is another typical example of the added economy . . . savings in time and labor made possible by power equipment!

Buyers and builders of equipment welcome Wisconsin power because of the delivered dependability . . . year-in and year-out reliability gained through such features as freeze-proof, heat-proof air-cooling, sub-zero to 140° . . . Timken tapered roller bearings at BOTH ends of the crankshaft, taking up ALL thrusts . . . and the high-tension, rotary-type OUTSIDE magneto with impulse coupling, assuring all-weather quick starting and steady running.

Write today for information! 4-cycle, single-cylinder, two-cylinder, and V-type four-cylinder models, 2 to 30 hp.

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World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 14 WISCONSIN

James L. Mills, a recent civil engineering graduate of the University of Illinois who has been with Warren and Van Pragg, Inc., Decatur, Ill., consulting engineers, has become a representative of Portland Cement Association, in Urbana, Ill.

Appointment of **Christian T. Beechwood,** of Conneaut Lake, Pa., as junior sanitary engineer, has been announced by the Pennsylvania Department of Health. **Charles F. Snyder** has left the post.

Van E. Nutley, construction engineer on the Bureau of Reclamation's Roza project at Sunnyside, Wash., has been transferred to Ephrata, Wash., where he will be on the field engineering staff, in charge of laying out laterals and distribution systems under the Columbia Basin project.

Isaac Basham is city engineer for Princeton, W. Va.

Thomas S. Burns, a former consulting engineer of Boston, Mass., and chief civilian engineer in Providence, R. I., Denison, Tex., and other districts of the Corps of Engineers, is now associated with Damon Dinerman & Cie, Cangallo 1522, Buenos Aires, Argentina, in the design of hydroelectric and irrigation developments.

W. F. Freeman, High Point, N. C., engineer, has been named chairman of the City Physical Development Committee at High Point which will work with the city council on laying out streets and planning the physical development of the city.

Frederick W. Kelley has been appointed chief engineer of the North American Cement Corp. at Catskill, N. Y.

Chester Hayward, engineer in the Charleston, W. Va., office of the Public Roads Administration for the last 20 years, is retiring because of the civil service age limit. He received his engineering degree from Brown University in 1906. From 1906 to 1912 he was associated with an engineering firm which constructed the subway tunnel between Brooklyn and New York, and later did engineering work on the New York State Barge Canal. He was with the New York state highway department from 1912 to 1918. In 1919 he joined the Public Roads Administration and was assigned to Ohio where he remained until he went to West Virginia in 1929.

(Continued on page 62)

GULF PRODUCTS *and* FINE SERVICE

keep equipment rolling at Marietta Air Base

E. A. Hudson's Sons, Bolton, Georgia, have a $401,000 contract to extend runways at the Marietta, Georgia, Air Base. Work includes 900,000 cubic yards of excavation, 28,000 square yards earth base, and concrete paving of runway extension 150 feet wide, 1500 feet long, and 12 inches thick.

"WITH the help of Gulf products and co-operative service, we're getting top performance from our equipment," says A. A. Owen, Project Superintendent. "In addition, our operating and maintenance costs are very low."

Leading contractors on all types of construction projects find it's good profit insurance as well as real economy to use Gulf lubricants and fuels. Always of the same uniform high quality, they work as a team to keep equipment running smoothly—you get more hauls, fewer overhauls!

Write, wire, or phone your nearest Gulf office today and arrange to use Gulf quality lubricants and fuels on your next job. They are quickly available to you through more than 1200 warehouses.

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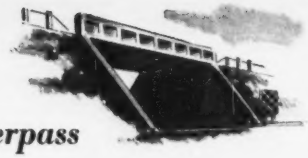

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HARTFORD 15, CONNECTICUT

Harold H. Kline, left, vice-president of Tobias Heller & Son, Inc., New York contractors, in charge of construction of the 26th Ward Sewage Treatment Works, Brooklyn, stands with Peter Petersen, superintendent.

Clay E. Smith has retired as state director in charge of the Federal Housing Administration at Little Rock, Ark. Fred B. Mitchell, who was assistant, succeeds Mr. Smith.

J. W. Reppel, Chillicothe, who joined the Ohio Highway Department in 1931, has been appointed assistant chief of its bureau of maintenance in Columbus.

Claude Davis, connected with the Montana State Highway Department for 17 years, is retiring to go with the Metcalf-Hamilton Bridge Co., Kansas City, Mo.

Wallace E. Belcher, structural engineer with the United Engineers and Contractors, Inc., Philadelphia, Pa., has been awarded the honorary degree of Doctor of Engineering by the University of Maine. He was graduated in civil engineering there and received his A.M. from Harvard in 1904. The citation mentions his responsibilities as structural engineer in connection with the construction of the Boston and Maine Railroad, North Station and Coliseum, the Pennsylvania Railroad, the 30th Street Station, Philadelphia, and work in public utility and industrial fields.

Fred Ervast, Sacramento, has been appointed road engineer of Placer County, Calif. Succeeding **Jerome Barieau,** resigned, he will take the position as soon as he is released from the Army Corps of Engineers.

Just off the press!

A new arc welding machine catalog— Welders for AC, DC, gas engine operation —capacities of 100 to 500 amperes.

Here, at last, is a helpful booklet that gives you complete data on all Airco arc welders — the machines with the stinger that penetrates. Divided into easy-to-read sections, you can quickly determine the welder suited to your production or maintenance job.

This booklet is handy, useful, bringing you a wealth of information covering design, distinctive features, specifications, power requirements, electrical characteristics, and outstanding operational qualities of each welder in the entire Airco line.

To give you some idea of the amount of material covered by this definitive booklet, here are a few of the many welders covered.

- "Bumblebee" and MCT — Transformer AC Arc Welding Machines
- "Hornet" 36A and "Wasp" — DC Arc Welding Machines
- "Yellow Jacket" Gas-Engine Driven Arc Welders
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EDUCATION and RESEARCH

Faculty Salaries

Salaries of teachers in engineering schools are in general below those paid to engineers of comparable experience in non-teaching employment, a committee of the American Society for Engineering Education reported last week.

The committee, headed by ASEE vice-president S. S. Steinberg, had completed a survey of salaries for comparison with salaries of teachers in other professional schools and those of engineers in non-teaching employment. The survey and report was a part of a general ASEE move toward higher standards of engineering education.

The committee's report indicated that engineering experience of teachers had little to do with the salary ranges.

In comparison with salaries paid to teachers in other professional schools, salaries of engineering teaching staffs at the median level are at the bottom of the range in all ranks except that of department head.

However, the percentage of engineering teachers whose salaries are supplemented by summer work is higher than that of any of the other professional groups except teachers of dentistry.

Jobs for Engineers

Employment records of recent Montana State College engineering graduates show that nearly all are employed. Of 210 graduated in the 1949 class, largest in the history of the college at Bozeman, 92 percent are known to be employed. Others, who may have jobs but have neglected to report the fact, are considered unemployed, E. W. Schilling, dean of the engineering school, reported.

Salaries reported by the 1949 graduates range from $240 to $325 per month, with an average of $263. They include civil, architectural, chemical, electrical, industrial and mechanical engineers, and graduates in architecture, engineering physics and industrial arts.

Highway Research

A $50,000 a year road research program is being carried out at Charlottesville, Va., by the Virginia Council of Highway Investigation and Research, an agency sponsored by the State Highway Department and the University of Virginia's engineering department.

Following a "road-roughness" study by R. L. Sheppe, Kentucky has rented Virginia's road-roughness indicator and is building a similar machine for its own use.

Two reports published by the council have been favorably commented on by officials of the U. S. Bureau of Public Roads. These include Sheppe's road-roughness study and a report on the weathering of certain road-building materials, as prepared by P. L. Melville.

These and other studies were designed to provide information on which to base future standards for road construction and maintenance. In most cases, research studies of this nature require months or years of tests and analysis.

Cement-water Mixtures

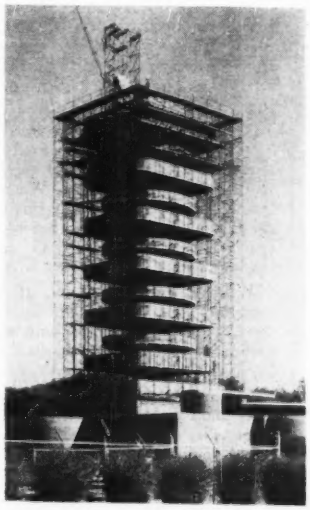
Accurate measurement of the bleeding of portland cement-water mixtures —identified with the appearance of water at the surface of such mixtures —has long been a problem for the materials engineer.

By means of an apparatus recently developed at the National Bureau of Standards by R. Valore, Jr., with J. E. Bowling and R. L. Blaine, this important property of cement pastes, mortars and concretes may now be measured directly and continuously within the range of practicable water-cement ratios.

A liquid, such as carbon tetrachloride, having a specific gravity intermediate between that of water and the cement-water mixture, is used as a displacement medium. It is imperative that the liquid medium can not be mixed with water and that it will not react with the constituents or hydration products of portland cement.

When such a liquid is placed over a sample of the cement-water mixture, bleeding water appearing at the surface of the mixture will rise through the liquid. In the present apparatus the bleeding water rises into a burette for measurement, while the head of the liquid bearing upon the surface of the sample does not exceed a depth of 0.75 in.

Further details may be obtained from "The Direct and Continuous Measurement of Bleeding in Portland Cement-Water Mixtures" by Rudolph C. Valore, Jr., Jas. E. Bowling, and R. L. Blaine, a paper that will appear as part of the American Society for Testing Materials proceedings for 1949.



IT'S A RESEARCH BUILDING—Frank Lloyd Wright is the architect for this 15-story tower under erection at Racine, Wis., for S. C. Johnson & Co., Inc. It is of cantilever construction 156 ft. high, built around a central core containing air and elevator shafts, staircase, etc. Floors alternately are 40 ft. square and of circular shape 38 ft. in dia. Except for narrow masonry bands at floor levels, walls will be entirely of glass. Wiltscheck & Nelson, Inc., is general contractor. (Photo courtesy of Johnson's Wax.)

Concrete Fellowships

Two graduate fellowships for the study of additives to concrete have been established at the University of Kentucky, Lexington, by The Solvey Process Division of Allied Chemical & Dye Corp. Known as the "Solvay Process Division Fellowships for Research on Additives to Concrete," they will involve a grant of approximately $4,000 for one year.

Research will be carried on at the engineering experiment station of the university. The studies will be directed principally toward increasing the workability of concrete through chemical additives.

90th anniversary—A convocation was held at Cooper Union, New York, on Nov. 2, celebrating the 90th anniversary of The Cooper Union for the Advancement of Science and Art. Speakers were Vannevar Bush, David Sarnoff and Frank Lloyd Wright.

Enrollment—There are 703 civil engineering students at Purdue University out of 6,360 students in the college of engineering.

Buildings—Rose Polytechnic Institute, Terre Haute, Ind., plans a $325,000 student center, and will remodel the present dormitory.

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OBITUARY

Jack H. Tyler, 36, civil engineer, died Nov. 10 in Washington, D. C. A graduate of the University of California in 1934 with a B.S. degree in civil engineering, he took two years of postgraduate work at the University of Southern California, after which he worked for the United States Engineers in California as a civilian. He went on military duty in 1942 in the Corps of Engineers and participated in campaigns in France. He had the European Theater medal with two bronze stars, and the Bronze Star medal. Recently he was with the Engineers' office at Gravelly Point near Washington.

Maxwell Stephens Cooley, 75, a civil engineer in the Navy's Bureau of Yards and Docks for more than 40 years, died Nov. 10 at Georgetown, D. C. A graduate of Cornell in 1896, he was first an engineer at Dannemora, N. Y. In 1902 he went to Washington as an engineering draftsman in the office of the supervising architect of the Treasury. During World War I, he served in the Bureau of Yards and Docks. At the time of his retirement in 1945 he was principal engineer of the division. In World War II he received one of the first civilian citations for meritorious service.

Walter Robertson, 71, retired civil engineer for the Internal Revenue Department, died Nov. 11 in Washington, D. C. After 28 years service with the federal government he retired last year and went to Brewster, Ohio.

William Travis Ayer, 69, of Wilmington, Del., retired Hercules Powder Co. engineer credited with many improvements in explosives, died Nov. 12.

William J. Sullivan, city engineer, Somerville, Mass., died Nov. 18. He was a graduate of Boston University and of Massachusetts Institute of Technology, and formerly was engineer on construction of underground conduit and water-pipe lines.

Edwin F. Bearce, 67, vice-president and chief engineer of the Chillicothe Paper Co., Chillicothe, Ohio, and prominent in flood-control and anti-pollution work, died Nov. 11. He was president of the directors of the Scioto-Sandusky Conservancy Commission, on the organization committee of the Ohio River Valley Water Sanitation Commission, director of the Ohio River Water Conservation and Flood Control Congress, member of the stream improvement committee of the American Pulp and Paper Association, and chairman of the central district of the National Council for Stream Improvement in the Paper Industry. He was also a member of the Chillicothe City Planning Commission, and was recently selected as the "outstanding engineer" by the Southern Ohio Chapter of the Ohio Society of Professional Engineers.

L. H. Weir, 71, widely known port authority, died Nov. 15 in Indianapolis, Ind. He was a field representative of the National Recreation Association, a former director of park and recreational planning for the association, and was instrumental in raising $10,000,000 to help establish park and recreational areas throughout the country.

Garald William McCrady, 56, who was the engineer in charge of installing the turbines at Shasta Dam, died last month in Redding, Calif.

Clarence B. Hoover, 68, superintendent of the Columbus, Ohio, division of water for more than 25 years, died in that city Nov. 5. A graduate of Ohio State University, 1903, he became an authority on municipal water supply and his service for Columbus began 45 years ago. The new dam soon to be constructed over Big Walnut Creek as the newest feature of the city's water system is to be called Hoover Dam in his honor.

Richard L. Drapeau, 49, an engineer for the New York City Board of Water Supply for 20 years died at White Plains, N. Y., Nov. 21. He was a graduate of M. I. T. and a veteran of the recent war.

Alpheus M. Johnson, 85, who retired about 10 years ago from the civil engineering staff of the Boston & Maine R. R., died at Concord, N. H. Nov. 19. He was a former member of the New Hampshire Legislature.

Gothold W. Seitz, 67, a builder formerly with Seitz & Perkins Construction Co., which built several airfields during the war, died at Poughkeepsie, N. Y., Nov. 20.

Oliver W. Holl, 91, dean of Stark County, Ohio, engineers, died at Canton, Nov. 16. Believed to be the oldest living alumnus of Ohio Northern University, he spent most of his life working for the county and the city. He was

(*Continued on page 68*)

MORETRENCH WELLPOINTS HELP SAVE SUMMIT BRIDGE . . .

When a bridge abutment starts to slip, it's time to act fast! U. S. Army Engineers, Philadelphia, saved Summit Bridge, Delaware, from complete collapse by:

First, installing a Moretrench Wellpoint System to remove the ground water, stabilize the soil and relieve water pressure in the area immediately surrounding the sliding abutment and banks.

Then, by driving 16 steel H-piles, 80 feet long, around the abutment to underpin the structure.

Three months after traffic was shut off, the bridge was reopened.

The Moretrench Wellpoint System used on this project is a permanent installation, operating continuously to stabilize the soil and insure future safety.

When you have a pumping problem count on Moretrench for quick, dependable help!

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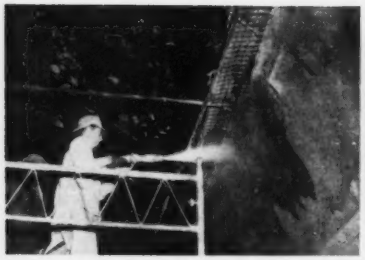

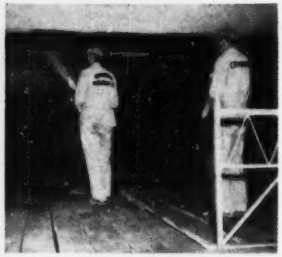

HOLLAND TUNNEL REPAIRED QUICKLY WITH "GUNITE" AFTER SPECTACULAR FIRE

Even before the recent Holland Tunnel fire had been completely extinguished, the Port of New York Authority was at work on the problem of restoring the tube to full usage. Work had to be done as quickly as possible in a manner which would meet the Port Authority's extremely high standards for construction.

The Cement Gun Company was selected to do portions of the job with "Gunite" because of our ability to meet both requirements best. Side walls and ceiling concrete were chipped back to sound material and built out to original lines with "GUNITE". The new metal ceiling was covered on the underside with 1¼" reinforced "GUNITE". Our trained crews outfitted with mobile equipment were on the spot quickly and we completed the job in an amazingly short time, despite the fact that traffic moved through the tunnel during the day and that we would work only at night.

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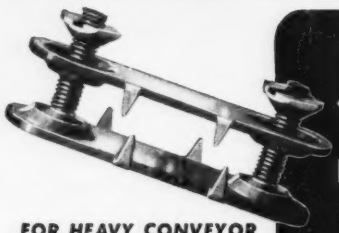

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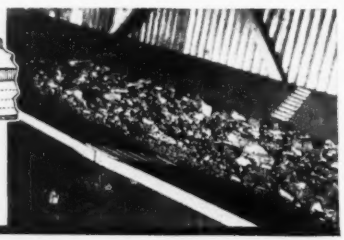

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in the city engineer's office at intervals between 1885 and 1923. He also served as Alliance city engineer in 1901 and 1902. Between 1889 and 1911 he was elected Stark County surveyor four times. He laid out the foundation of the present Stark County Courthouse in 1894, and also staked out the site of the William McKinley monument, in Canton.

C. Walker Hodges, 63, head of the Hodges Dredging Co. of New Bern, N. C., died Nov. 15. He obtained his civil engineering degree from North Carolina State College, and before going into the dredging field was one of the early paved road builders and drainage engineers in eastern North Carolina.

Herman Morse Smith, 65, civil engineer, died at Greensboro, N. C., Nov. 13.

Albert O. Hastings, 65, former chief engineer for the Indiana Highway Commission, died Nov. 11 in Angola, Ind. He was one of the original engineers with the highway department when it was created more than 30 years ago. He had been with a Chicago construction firm since leaving the state agency last January.

William H. Henderson, 65, retired steel engineer, died Nov. 15 in Woodworth, Ohio. Formerly he was assistant field engineer of the Republic Iron & Steel Co., Youngstown, and went to Mexico in 1912 as superintendent of construction for the Green Gold & Silver Co. He was field engineer for Carnegie-Illinois Steel Corp.'s McDonald Works from 1933 until he retired last April.

L. Deming Tilton, 58, city planning consultant engineer, died recently in San Francisco. He had been a private city and county planning consultant since his resignation as San Francisco city planning director in 1946. A graduate of the University of Illinois and a veteran of World War I, Mr. Tilton began his career with Harland Bartholomew, St. Louis, Mo., and travelled all over the United States as planning consultant. During World War II he was western director for the National Resources Planning Board. His recent assignments included work for Fresno, Palo Alto, San Diego, and Santa Barbara, Calif.

Bernard William O'Toole, 62, bridge engineer for the Utah Road Commisison from 1923 to 1948, died Oct. 31 in Ogden, Utah. Since May, 1948, he had been with the Idaho Bureau of Highways.

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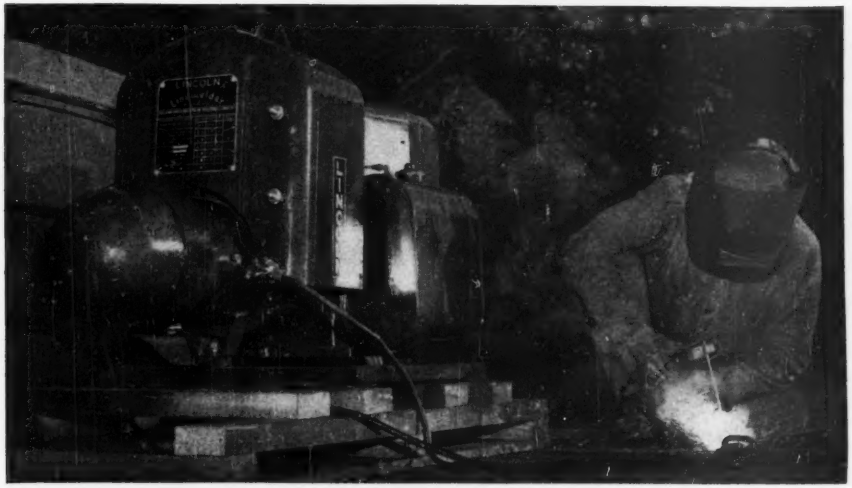

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LINCOLN DC-180. Here's an amazing value in arc welders to simplify your welding and cut costs . . . an engine driven welder priced at only $375.00, *less than that often charged for a welding generator alone.*

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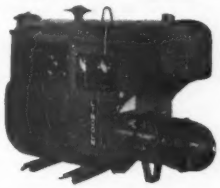

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For KNOW-HOW • ENGINEERING • SUPERVISION • EQUIPMENT • to keep jobs DRY

The Stang System has proved its efficiency and economy on both large and small jobs all over the United States. Stang engineering and supervision in planning, installation and operation insures a DRY JOB at all times.

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Elections and Activities

Harry W. Bolin, principal structural engineer, State of California, Division of Architecture, Los Angeles, was elected president of the Structural Engineers' Association of California. Vice-president is E. D. Francis, consulting structural engineer of Sacramento, Calif., and secretary-treasurer is George E. Brandow, Brandow and Johnston, structural engineers, Los Angeles. Directors are W. H. Petersen, Sacramento; Mark Falk, John A. Blume, and Jesse Rosenwald, all of San Francisco; and Harold King and S. B. Barnes of Los Angeles.

At its recent 47th annual convention in Cleveland, Ohio, the American Automobile Assn. passed a resolution urging completion in the next 15 years of a 40,000-mile system of national highways, and voiced strong opposition to making federal aid available for either local rural or local urban roads. The delegates also proposed that trucking concerns pay the difference between the cost of building roads for passenger cars and light trucks and that of building the roads for the larger commercial vehicles.

The newly-elected president of the North Central Missouri Chapter of the Society of Professional Engineers is Harold B. Vasey, city manager of Brookfield. Other officers elected were E. R. McKee, Macon, vice-president, and Joe Duncan, Brookfield, secretary-treasurer. Board members are Ben Leslie, Lloyd Banta, Frank Graham and C. T. Botsford.

MAJOR MEETINGS

Highway Research Board, National Academy of Sciences, Washington, D. C., Dec. 12-16.

National Research Council, Washington, D. C., Dec. 13-16.

Canadian Construction Association, Mount Royal Hotel, Montreal, Que., Jan. 15-18.

American Water Works Association, N. Y. Section midwinter luncheon, Hotel Statler, New York, N. Y., Jan. 17.

Associated Equipment Distributors, Stevens Hotel, Chicago, Ill., Jan. 15-19.

National Association of Home Builders, Congress and Stevens Hotels, Chicago, Ill., Feb. 19-23.

Ontario Road Builders' Association, Royal York Hotel, Toronto, Ont., Feb. 22.

Associated General Contractors of America, national convention, San Francisco, Calif., Feb. 27-March 3.

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greater speed!

184 mph top speed at sea level. Cruises at 170 mph at 8,000 feet, using less than 60% of maximum rated take-off power. No engine overload.

economy!

Only 9½ gallons of fuel consumed per hour. Four people with baggage carried at seat-mile cost as low as 1¼ cents.

safety!

Sturdy framework results in extra safety margins. Rated in utility category at full gross weight, with limit flight load factor of 4.4 G's, plane was subjected successfully to special tests not required by CAA.

strength where it counts!

Note low, sturdy landing gear with wide tread and exclusive cross-bracing of struts. Nose gear position, plus long wheelbase, eliminates pitching, allows greater braking.

style and comfort!

Sound-proofed cabin, handsome roomy interior, room for four six-footers. Ease of entry and exit because of wide autotype door.

. . . then you'll see why it's a better buy!

Compare these performance features

- Top speed, 184 mph
- Cruising speed, 170 mph
- Range, 750 miles
- Service ceiling, 17,100 feet
- Fuel economy, 9½ gal. per hour

Compare these comfort features

- Exclusive retractable step
- Limousine entrance
- Insulated, sound-proofed cabin
- Quickly removable rear seat
- Luggage compartment accessible two ways

You'll find other "extras" you'll appreciate when you actually see the Beechcraft Bonanza—like the exclusive retractable step, two-way accessibility of the luggage compartment, and maximum visibility. Go over the ship yourself, soon. And for illustrated brochures that go into more details, write today on your company letterhead to Beech Aircraft Corporation, Wichita, Kansas, U.S.A.

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BONANZA MODEL A35

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

This COMPLETE ASSEMBLY is identical on all P&H DIESELS

Cutaway of complete cylinder head and liner assembly.

Think what this means to you as a Diesel user:

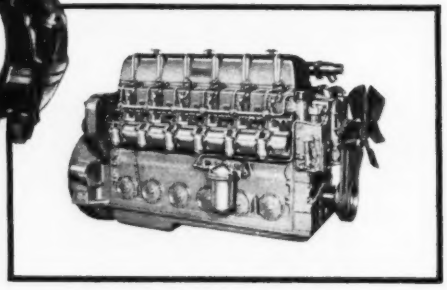
This one cylinder assembly (and every part in it) fits your P&H Diesel Engine whether it is a 1,2,3,4, or 6-cylinder model.

It means Easier Servicing—Cylinder head, liner, piston and rod assembly can be replaced as a unit. No other diesel line provides such easy across-the-board servicing.

It Saves You Time—You can replace this entire assembly right in the field without disturbing engine mountings—without even touching the oil pan. It saves hours—even days—on important jobs.

It Saves You Money—Such complete standardization with simpler design (fewer parts) minimizes service problems, simplifies parts stocks, reduces costs.

This important Added Value protects your investment in P&H Diesel Engines—assures the utmost satisfaction in year after year performance. For literature, write Diesel Division, Harnischfeger Corporation, Port Washington, Wisconsin.



P&H Diesels are built in 1, 2, 3, 4 and 6-cylinder models from 20 to 145 h.p.; 2-cycle.

P&H DIESEL DIVISION
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PORT WASHINGTON WISCONSIN, U. S. A.

Miscellaneous Notes on Booklets and Reprints

EARTH PRESSURE TESTS, the final report of large scale earth-pressure tests with model flexible bulkheads made for Bureau of Yards and Docks at Princeton University, is available in limited quantity from Prof. Gregory P. Tschebotarioff, School of Engineering, Princeton University, Princeton, N. J. $1.

THE EFFECTIVENESS OF PAINT on steel used in house construction is the subject of the initial report on a research project at Batelle Memorial Institute.

This report concludes that of the various protective coatings on structural steel studied, maximum protection was afforded when the steel was completely coated, with pigments either essentially 100 percent red lead, or predominantly so, or zinc chromate. The 46-page report is titled, "A Study of Paints for Enclosed Structural Members in Steel Housing Construction," published by the American Iron and Steel Institute, 350 Fifth Ave., New York 1, N. Y.

CHARTS AND OTHER DATA on climate in several regions of the United States, as well as interpretations to enable them to be adapted for design of structures, are being presented in successive issues of the BULLETIN of the American Institute of Architects, beginning September. Reprints will be available for 50c. each, or on a subscription basis, for $3 for the first six regions, including a looseleaf binder, and for $3 for the next six. They may be obtained from HOUSE BEAUTIFUL —the magazine that sponsored the studies—572 Madison Ave., New York 22, N. Y.

A LARGE SHELF of plans and specifications has been prepared for New York City is reported in "Public Works Construction Progress 1946-1949". Submitted by Robert Moses, city construction coordinator, to Mayor William O'Dwyer, this report states that plans for $1,150,000,000 of work have been completed and plans for $1,800,000,000 of work are under way. Of the completed plans, $195,000,000, of construction has been completed and $505,000,000 is under way. In addition the State of New York, the Triborough Bridge Authority, the Port of New York Authority, the New York City Housing Authority and other quasi-public agencies in the housing field have also completed plans for construction in the city.

A ROGERS 'Tagalong' Trailer AND YOUR DUMP TRUCK

...form a PROFIT-PRODUCING TEAM

Contractors everywhere are turning to the Rogers "Tagalong" for a bigger day's work with maximum economy.

One man can do all jobs. Load and unload trailer, connect and disconnect it; drive truck and operate equipment carried.

Ideal for light and medium shovels, cranes, bulldozers, etc.

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Showing cable around sheave and dump body about to be raised to engage towing tongue.

Body elevated. Tightened cable has raised drawbar and engaged towing tongue. Safety coupling pin is inserted. Trailer is ready to roll when body is lowered.

ROGERS HEAVY DUTY Gooseneck Trailers

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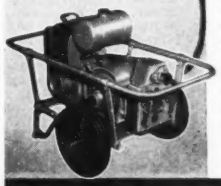
FOR BRIDGE DECKS • MUNICIPAL PAVING • HIGHWAY WIDENING



JACKSON PAVING UNIT

This manually guided, electric vibratory paving machine and portable power plant, will place upward of 65 cu. yds. of stiff mix concrete per hour; will undercut at sideforms and curbs; strike off to crown (both regular and inverted); roll back for second passes. Works right up to and around sewers, manholes and other obstructions. Quickly adaptable to any slab width from 6' up to any practical width. Has strong tendency to propel itself. Operators work from front, side or rear. Power Plant generates both single and 3-phase 60 cycle AC and may also be used for lights and operating other contractor's tools. Write for complete details.

For Sale or Rent at Jackson Distributors

ELECTRIC TAMPER & EQUIPMENT CO. Ludington, Mich.

MATERIALS AND LABOR PRICES

Market quotations on construction materials and wage rates reported monthly by ENR correspondents
January Materials and Labor Prices will appear in the January 5, 1950 issue

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots incl. $1.00 per bbl. for bags, cash. dis. not deducted			SAND AND GRAVEL Per ton, carload lots Gravel,	Gravel,		CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8 x 8 x 16-in.; truckload del.; per block		CONCRETE Ready Mixed 1:2:4, over,
	Cloth	Paper	Bulk	1½ in.	¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand gray	Lt. wgt. agg.	50 c.y., del.
Atlanta	$4.16	$3.45	$3.10	$2.10	$2.10	$1.75	$2.10	$2.10	$1.65	$1.85	$0.1725	$0.1725	$11.00
Baltimore	....	3.39	3.14	2.40‡a	2.40‡a	1.95‡a	2.00‡a	2.70‡a	2.45‡a	2.45‡a	.16	.16a	10.25
Birmingham	3.75	3.00	....	2.06	2.06	1.84	2.50	2.50	1.00	1.20	.145	.145	7.75
Boston	4.47	3.67	3.41	2.50a	2.50a	2.50a	1.00a	1.70a	....	....	.196	.205a	10.45h
Chicago	3.63/3.69	2.82/2.89	2.58/2.64	2.75‡b	2.75‡b	3.20‡b	2.75‡b	2.75‡b	2.00‡	2.00‡	.20	.20b	....
Cincinnati	4.14	3.26	3.08	1.85‡c	1.85‡c	1.75‡c	2.20‡h	2.20‡h	1.50	1.50	.19	.205	10.60d
Cleveland	3.83	3.03	2.73	1.90def	1.65df	1.55d	3.55‡a	3.55‡a	2.75	2.75	....	.21	11.80g
Dallas	3.57	2.82	2.52	2.00	2.15	1.75	2.10	2.15	....	....	.080e	.125	9.15
Denver	....	3.54	3.29	1.85	2.00	1.15	....	....	....	....	.20	.23a	9.65
Detroit	....	2.98	2.73	3.25/3.75‡b	....	3.25‡b	3.00‡	3.00‡	3.00‡	3.00‡	.17	.18a	9.65f
Kansas City	3.91	3.16	2.85	1.95	1.95	1.30	1.45d	1.45d	....	....	.15ag	20eh	10.40b
Los Angeles	....	3.72a	3.32a	1.94‡a	2.04‡a	1.74‡a	1.92‡a	1.92‡a	....	....	....	.075f	9.70hh
Minneapolis	4.13ed	3.33ed	3.07ed	2.30‡ag	2.30‡ag	1.35‡ag	2.40‡ag	2.40‡ag	....	....	.21a	....	10.90fi
Montreal	....	2.46ac	2.31ac	.....	2.50hi	2.00i	1.35ij	1.60ij	....	....	.22	.16a	9.05ek
New Orleans	....	2.90e	2.65e	2.32	2.32	1.82	....	....	1.05	1.25	.23	...	12.40
New York	4.29	3.40	3.24	2.00bk	2.00bk	1.45bk	2.25bl	2.25bl	....	....	.18A	.18ah	10.50a
Philadelphia	3.93/4.23‡	3.13/3.43‡	2.87/3.17‡	2.45‡	2.55‡	2.05‡	1.90‡	1.95‡	1.50	1.50	18/.22	....	10.80
Pittsburgh	3.90	3.18	2.85	2.05‡	2.05‡	2.00‡	2.50‡	2.50‡	2.05	2.05	.22d	.22d	10.85
St. Louis	3.74/3.80h	2.94/3.05h	2.75h	2.60‡am	2.40‡am	2.00/2.40‡am	1.60j	1.60j	1.15	1.15	.215	.24ci	10.40
San Francisco	....	3.39	2.99	1.84	1.94	1.94	1.94	.....	....	....	....	.25e	10.75
Seattle	....	3.55a	3.05a	2.75‡bm	2.75‡bm	2.75‡bm	3.50‡bm	3.50‡bm	....	..	.22j	.3135	9.75j

‡ Delivered. * Prices incl. dealers comm. except as noted.
CEMENT: *a* Subj. to 10¢ dis. *b* Less 2% for cash. *c* CL price dealers' comm. not incl. *d* Dealers sell only LCL. *e* Plus switching charges.
SAND, GRAVEL, STONE & SLAG: *a* Truck lots. *b* Per cu. yd. *c* 5 tons or more. *d* F.o.b. plant. *e* ½". *f* Pea gravel. *g* Less 5% for cash. *h* Less than 5 tons. *i* Sales tax incl. *j* F.o.b. quarry. *k* Barge lots asd. *l* F.o.b. scow Hudson River. *m* Less 2% for cash

CONCRETE BLOCK: *a* Cinder. *b* Waylite. *c* Haydite. *d* Celocrete. *e* 5⅓ x 8 x 12 in. *f* 4 x 8 x 12 std. wgt. *g* F.o.b. truck at job. *h* F.o.b. plant. *i* Less 2% for cash. *j* Less 1% for cash.
READY MIXED CONCRETE: *a* 5 cu. yds. or over del. Man. *b* 25 cu. yds. or more. *c* 10–100 cu. brackets. *d* Truck loads up to 500 cu. yds. *e* 2,000 lb. concr. *f* 2500 lb. comp. *g* Aver. haul 7–9 mi. zone. *h* Less 50¢ for cash. *i* 5% off for cash. *j* 2% off for cash. *k* Sales tax included *l* 1:2½:4.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10c. per bbl. for payment within 15 days of date of invoice. Subject discount 10c. per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For cloth bags, add $1.05 per bbl.; 25¢ refund allowed for each returnable bag; for paper bags add 25¢ per bbl., not refundable

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$2.40†	Buffington, Ind	$2.20	Steelton, Minn	$2.40	Muskegon, Mich	$2.40†	Toledo, O	$2.40†
Clinchfield, Ga	2.40†	Independence, Kan	2.30	Leeds, Ala	2.25	Saginaw, Mich	2.35†	Milwaukee, Wis	2.40†
Kingsport, Tenn	2.40†	Hannibal, Mo	2.35	Duluth, Minn	2.40	Wyandotte, Mich	2.40†	Green Bay, Wis	2.40†
West Des Moines, Iowa	2.30†	Northampton, Pa	2.40	Hudson, N. Y.	2.40	Buffalo, N. Y.	2.40†	Ironton, O	2.30
Nazareth Pa	2.40†	Universal, Pa	2.40	Alpena, Mich	2.25†	Oswego, N. Y.	2.50†	Montreal City	2.13
Bath, Pa	2.40†	Waco, Tex. (+ 9¢ tax)	2.20	Detroit, Mich	2.40†	Cleveland, O	2.40†	W. Winfield, Pa	2.40†

‡ *Prices to hold for fourth quarter of* 1949

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	PAVING ASPHALT Per ton, less than 80 penetration Tank car	Drums	ASPHALT BINDERS—FLUXES Per gal., 80-300 penetration Tank car	Drums	CUTBACK ASPHALT Per ton Tank car	Drums	ROAD OIL Per gal. Tank car	ASPHALT EMULSION (Quick-breaking) Per gal. Tank car	Drums
Atlanta	$73.00	$35.00	$2.25	....	....	....	....	....	....	....	....	....
Baltimore	150.00‡	57.70‡	.....	$22.00	.....	$.09	$0.145	$.09	$.165	$.09i	$.09	$0.11
Birmingham	.....	32.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	24.50a	$35.50a	.1036a	.185a	.115awe	.205awe	.10a	.113a	.205a
Chicago	155.00‡a	85.00/88.00‡b	2.70/3.50‡f	20.25b	30.25b	19.25bw	29.25bw	.0875bw	.16w	.075b	.1025/.1075b	.15/.1675b
Cincinnati	.....	.....	.....	20.50k	.....	.0875	.0890	.0965w	.0965	.....	.....	.....
Cleveland	.....	40.00‡	3.43g	25.00	35.00	25.00v	34.50v	.11w	.22w	.10	.12	.25
Dallas	e	40.00	e	23.95	42.97	.1012	.1898	26.99	47.77	.0987	.1062	.1423
Denver	.....	43.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	.....	.....	29.05	.....	.12v	.....	.1188w	.....	.....	.....	.1925
Kansas City	.....	40.00d	.....	19.05el	.....	.....	.....	.075ew	.0775w	.065e	.....	.....
Los Angeles	e	.....	e	12.50dm	.....	12.50dv	.....	14.00d	.....	12.50dv	.0775j	.1575j
Minneapolis	.....	.....	2.83h	24.00	35.00	22.00v	33.00v	24.00	35.00	.09	.12	.22
Montreal	137.00	e	e	27.00n	36.65n	16.70nu	18.70nu	16.30nu	18.30nu	15.20nu	.174n	.215nu
New Orleans	.....	.....	.....	16.50e	.....o	16.50ve	.....o	.08ew	.....o	.0775	.08	.1425r
New York	.....	.....	2.35f	25.50	37.80q	24.50v	43.88qv	.1040w	.1867qw	.0990	.1040	.1847q
Philadelphia	150.00	110.00	4.06	23.00	.....	22.00v	.....	.095w	.....	.....	.....	.....
Pittsburgh	165.00	42.00	4.50	22.00	36.00	.11	.23	27.00	37.00	.095	.10	.21
St. Louis	.....	.....	.....	21.65f	.....	16.48	.....	.0925w	.....	.15	.1081	.25
San Francisco	.....	57.75e	.....	15.50g	31.00gp	15.50gkv	.....	17.50g	.....	.....	.09	.16
Seattle	.....	.....	.....	15.50h	36.00h	16.00hv	.....	17.50h	21.50hr	16.00hv	.08h	.09h

‡ Delivered.
PAVING BRICK & BLOCK: *a* CL. *b* 3½ x 4 x 8½. *c* 2½ x 8½ x 4. *d* F.o.b. Buffalo, Kans. *e* Not used. *f* 2" interior 6# treat. *g* 3". *h* 8# treat.
ASPHALTS: *a* Price at plant, Everett, Mass. *b* F.o.b. refinery, Lockport, Ill. *c* F.o.b. Sugar Creek, Mo. *d* F.o.b. refinery, El Segunda. *e* F.o.b. Baton Rouge. *f* F.o.b. Wood River or Roxana, Ill. *g* F.o.b. Richmond, Calif. *h* F.o.b. Martinez, Calif. *k* 50–300 penetr. *l* Less than 100 penetr. *m* 40–80 penetr. *n* Tax incl. *o* Drums not avail. *p* Shipped in steel bbl. *q* Use of used drums. *r* In customer's drums. *s* Shipped in drums, per drum. *t* 55-gal. drums. *u* Per 100 gal. *v* Per ton. *w* Per gal. *i* Bulk refinery. *j* F.o.b. refinery, Englewood,

· *the* falling Apple
·· *and* falling Water

THE LAW OF GRAVITY in operation!

S. Morgan Smith was one of the first in this country to successfully apply this principle!

The almost 75 years, that have passed since his start, mark great achievement in the building of Smith hydraulic equipment - and turbines, alone, totalling nearly 12 million Hp. capacity! This reservoir of designing, engineering, research and field experience is yours, when you place your hydraulic problems in our hands! Drop us a line - today!

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POWER by SMITH

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT. SHAPES-PLATE	REINF. BARS[a,b] billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard[c]	Light[c,f]	Re-rolled	TRACK SUPPLIES Angle Bars	Std Spikes	Tie Plates[g]	Track Bolts[d]
Birmingham Area	$3.25	$3.35	$6.75	....	$64.00	$71.00	Not	$4.25	$5.35	$4.05	.. ..
Chicago Area	3.25	3.35	6.75	$4.05	64.00	71.00	avail-	4.25	5.35	4.05	..
Pittsburgh Area	3.25	3.35	6.75	4.05	64.00	71.00	able	4.25	5.35	4.05	....
Buffalo Area	3.30	3.35	6.75	4.05	64.00	71.00	...	4.25	5.35	4.05	$8.50
Cleveland	..	....	6.75	....	.....	.....	....	....	....	...	8.50
Youngstown Area	....	3.35	....	....	.....	.....	....	....	5.35	....	....
Geneva	3.25	....	....	....	.....	.....	...	.. ..	....	....	....
Los Angeles	....	4.05	....	....	.....	.....	....	....	5.35	....	....
Pueblo	3.25	3.35	....	....	64.00	71.00	....	4.25	5.35	4.05	8.50

[a] Fabricated: To consumers: $4.25; except $5.00 Seattle, Wash. [b] Rail steel price $3.85; Williamsport, Pa. [c] Rail steel $102 per ton Williamsport, Pa. [d] Treated. Untreated $8.25. $85.00 Minnequa, Colo. [e] Except $66.00 Minnequa, Colo. [f] Except $4.20 Pittsburg, Calif.; $4.50 Seattle, Wash. [g] Except $4.20 Pittsburg, Calif.; $4.50 Seattle, Wash.

IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb base price	REINFORCING BARS Per 100 lb., base price[u] 5 tons to carload lot[h] New billet	Rail steel	Add switch	$/cwt for Del.	EXPANDED METAL LATH[k] Per 100 sq. yd., carload lots Std. diamond mesh, 3.4 lb.	Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING[dd] Per 100 sq. ft., carload lots 4x16 in., No. 5 & 10 wires	4x12 in., No. 8 & 12 wires	6x6 in., No. 6 & 6 wires
Atlanta	$4.75	$5.225[k]	$5.225[k]	$.025	$.10	$31.50	$31.50			
Baltimore	5.51	4.47[l]	....	....	.10	40.00	43.00			
Birmingham	5.08	5.08	5.50	.05	.15	43.00[p]	45.50[p]			
Boston	5.62[k]	5.46[k]	5.46[kk]	....	.10/.15	31.00	33.00			
Chicago	4.90-5.05	4.30[ff]	4.30[ff]	.0625	....	31.00[‡]	33.00[‡]			
Cincinnati	5.44[‡r]	5.44[r]	....	....	....	31.00[ee]	33.00-[ee]			
Cleveland	5.00[hh]	4.37[r]	....	....	.10	34.50	36.50			
Dallas	6.25	5.00	5.00	....	....	43.50	46.00			
Denver	6.45	6.65[e]	....	....	....	47.00[a]	54.50[qq]			
Detroit	5.28	....	....	....	.10	33.00[x]	40.00[q]			
Kansas City	5.50	4.80[d]	....	....	....	37.00	39.00			
Los Angeles	5.45[f]	5.40	....	....	.15	37.00[f]	41.00[kk]			
Minneapolis	5.29	5.83[ll]	5.83[ll]	....	.15	33.00	35.00			
Montreal	5.25[i]	5.15[i]	5.15[i]	....	....	44.10[h]	46.80[h]			
New Orleans	....	5.00[nn]	....	.05	.10	32.00	32.00			
New York	5.13[w]	5.48	5.33	....	.15/.20	33.00[nt]	35.00[nt]			
Philadelphia	5.25	5.55	....	....	....	34.50[‡]	36.50[‡]			
Pittsburgh	4.40/4.50	4.40/4.50	4.40/4.50	.05	.10	32.50	34.50			
St. Louis	5.42[k]	4.77[e]	4.77[e]	....	....	42.00[aa]	48.00[aa]			
San Francisco	5.90[ii]	5.65	....	....	....	36.50	38.50			
Seattle	3.90[e]	5.25[nl]	....	....	....	82.00[mm]	42.00[mm]			

A.P.M.* Joliet, Illinois, Donora, Penn., $2.36
F.o.b. Mill: Monessen, Penn., $2.36

A.P.M.* Joliet, Illinois, Donora, Penn., $1.63
F.o.b. Mill: Monessen, Penn., $1.64

A.P.M.* Joliet, Illinois, Donora, Penn., $2.47
F.o.b. Mill: Monessen, Penn., $2.48

*At Producing Mill

‡ Delivered. [a] Mill prices. [b] 1-5 tons, add 35c. Less than 1 ton, add 50c. [c] 20 tons or over base. [d] Mill price plus freight. [e] F.o.b. plant. [f] Includes delivery in free delivery zone. [h] List price. Dominion tax exempt. Provincial and Municipal tax extra. [i] Plus Dominion, Provincial and Municipal sales tax. [j] Price per ton. [k] F.o.b. city. [l] Intermediate and hard grade, new billet. [m] Per sq. yd. [n] 5 to 15 tons base. [p] Del. of 5000 sq. yd. or less. [q] Std. ribbed. [4 lb. per sq. yd. [r] 5 tons or over. [s] LCL. [t] Asphalt coated. [u] Note: Revised size extra—1 in., 1¼ in., 1½ in. 10¢; ¾ in., ⅞ in. 15¢, ⅝ in. 20¢, ½ in. 35¢, ⅜ in. 55¢, ¼ in. $1.30. [v] Under 20 tons. Straight. [w] Copper bearing. [x] 2.5 lb. per sq. yd. [y] $.0093 transportation tax included. [z] Copper alloy. [aa] Delivered truck to job. Contractor to do unloading. [bb] F.o.b. dock. [cc] F.o.b. cars. [ff] Carload lots. [gg] Including sales tax. [hh] Delivered price is $5.00. [ii] Rolled at Geneva mill. Shapes rolled at Fontana, $6.90. [kk] ½" ribbed. [ll] 5 to 8 tons. [mm] 2% off for cash.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE Per net ton f.o.b. 6 in. to 24 in.[a]	VITRIFIED SEWER PIPE Per foot. Delivered ASTM C13-44T std. 8 in. e.s.	std. 12 in. e.s.	24 in. ds.	36 in. ds.	CLAY DRAIN TILE ASTM C4-24 Per 1,000 ft., carload lots, f.o.b. 6 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered; ASTMC 14-41 12 in.	24 in.
Atlanta	$89.50	$0.43	$0.67	$3.39	$7.00	$114.00	$140.00	$0.45	$2.00
Baltimore	93.88	.51	.98	3.95	10.00	220.00	341.00	.80	2.25
Birmingham	82.50	.40	.72	2.84	....	210.00[‡]	375.00[‡]	.90	2.50
Boston	97.46	.413[uuz]	.823[uuy]	3.60[uuy]	10.00[uuy]	173.40	267.60	1.45[‡mq]	3.60[‡mq]
Chicago	96.49	.51	1.00	4.25	13.25	150.00[‡]	270.00[‡]	.70	2.35
Cincinnati	94.90	.440	.850[b]	3.40	10.58	220.00[‡]	340.00[‡]	.60	2.25[‡]
Cleveland	97.13	.357[z]	.668[5z]	3.015[r]	8.405[z]	147.50	231.00	.65	2.50
Dallas	99.28	.365	.657	2.63	6.25	.....	.....	.49	1.60
Denver	104.36	.414[d]	.714[d]	2.98[dd]	....	.....	.....	.74[dd]	2.50[dd]
Detroit	92.13	.55	1.06	4.18	12.09	200.00[‡m]	310.00[‡m]	.65	2.50
Kansas City	98.41	.418[m]	.76[m]	3.00	.....	215.00[m]	375.00[m]	.60[l]	2.00[l]
Los Angeles	111.06	.426	.927	4.532	11.298	193.00[‡]	324.00[‡]	.72	....
Minneapolis	91.86/100.67	.62[mo]	1.12[mo]	4.35[mo]	.....	.....	.....	1.29[h]	3.67[h]
Montreal	100.00	.77[s]	1.35[s]	4.47[s]	8.50[ss]	.60[p]	.48[p]	72.00[jkaa]	218.00[jkkaa]
New Orleans	92.68	.448	.81	4.36	8.79*	231.00[bb]	405.00[bb]	.65	2.29
New York	92.80/97.50	.60	1.12	4.40	12.20	.....	.....	1.00	2.50
Philadelphia	90.47	.54	.99	4.08	10.28	235.00[‡]	300.00[‡]	1.25[h]	3.20[h]
Pittsburgh	97.76	.364[m]	.70[m]	2.70[m]	6.625[m]	134.20	197.40	1.05[h]	2.50[g]
St. Louis	94.27	.48	.92	3.80	9.00	.....	.....	1.15[il]	2.45[il]
San Francisco	111.06	.50[d]	.99[d]	4.32[d]	10.80[d]	188.00[dl]	313.00[dl]	.99	2.85
Seattle	112.95	.51[b]	.91[b]	....	....	150.00[c]	.....	.80[ee]	2.40

*WROUGHT STEEL PIPE
(Full standard weight)

Mill	3½ to 6 in. Lap Weld[ff] Black %	Galv %	2½ & 3 in. Butt Weld[ff] Black %	Galv %
Lorain, Ohio	45.5[a]	30.0[a]	35.5	27.0
Aliquippa, Pa.	45.5[a]	30.0[a]	35.5	27.0
Sparrows Pt., Md.	42.5	27.0	33.5	24.5
Benwood, W. Va.	44.5	29.0	35.5	27.0
Youngstown, O.	42.5	27.0	35.5	27.0
Indiana Harbor, Ind.	42.5	27.0	34.5	24.5
Sharon, Pa.	45.5[a]	30.0[a]	35.5	27.0
Wheatland, Pa.	45.5[a]	30.0[a]	35.5	27.0
Erie, Pa.	44.5[a]	29.0[a]	35.5	27.0
Fontana, Calif.	33.5[ab]	18.0[ab]	24.5	18.0[ab]

[a] Threaded and coupled. [b] Continuous weld

‡ Delivered. † F.o.b. [a] B. & S. class B and heavier, CL, Burlington, N. J. (base) $87.50. Based on existing freight rates; subject to rate change. Gas pipe and class A, $5 per ton additional. 4 in., $5 per ton additional. 30 in. and larger, usually $1 per ton less. [b] Extra strength ASTM C 200-44T. [c] 4-in., $90. [d] 8836-A. [e] 30 in. [g] Culvert pipe. Reinforced, ASTM C76-41. [h] Reinforced, ASTM C75-41. [i] Reinforced, ASTM C76-37. [j] Centrispun. [k] Per 100 ft. [l] F.o.b. plant. [m] Truck delivery. [o] Listed price is based on LCL (no minimum). [p] Less than 5 ton loads, price per ft. [t] Within switching limits. [u] ASTM C13-40. [r] F.o.b. city. [s] 2 ft. lengths. [y] 3 ft. lengths. [z] CESA A 60-1941 specifications used. [aa] No standard specifications in Can. [bb] Freight allowed to destination in city. [cc] Truck loads; f.o.b. plant, New ton. [dd] LCL, delivered, f.o.b. truck. [ee] 1% off for cash. * Not stocked, only made to order.

*WROUGHT STEEL PIPE: Discounts from standard list consumers carload prices. Base price approx. $200 per net ton. List prices per ft.: *Butt Weld:* ⅜ in., 5½¢; ½ in., 6¢; ¾ in., 6¢; ¾ in., 8½¢; 1 in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 76½¢. *Lap weld:* 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. Freight rates to destination to be added to price plus 3 percent tax on transportation.

WROUGHT IRON PIPE: List prices per ft. same as wrought steel pipe. Discount for Pittsburgh base. *Butt weld*— 1 in. and 1¼ in. black, +4.5, galv. +27.0; 1¼ in. black, 1.5, galv. +23.5; 2 in. black 2, galv. +23.0. *Lap weld*— 2½ in. to 3½ in. black + 5, galv. +26.5; 4½ in. to 8 in. black + 2, galv. +22.0. Freight rates to destination to be added to name delivered price.

"We're the Sludge Blanket Particles in the Permutit Precipitator that save 40% on chemicals, 75% in time!"

The Permutit® Precipitator offers you a new and more efficient means of removing impurities from your water! It does this by precipitation, adsorption, settling, and upward filtration. It requires less time, less chemicals, and up to 50% less space than any previous design of reaction and settling tank!

The Precipitator's unique sludge blanket is the chief reason for its amazing efficiency. Positive agitation assures a thorough mixing of water and chemicals. In the filter zone, the sludge blanket is kept fresh and active at all times. A photoelectric blow-off control assures a proper removal of sludge for varying flow and dosage rates. The sludge blanket level thus remains constant.

For full information concerning this precipitator, write to The Permutit Company, Dept. ENR-12, 330 West 42nd Street, New York 18, N. Y., or to the Permutit Company of Canada, Ltd., Montreal.

★ ★ ★

See These Benefits: LENGTHENED FILTER RUNS • LOW TURBIDITY • SHORT DETENTION TIME • ADAPTABLE TO VARIABLE FLOW RATES

Permutit®

WATER CONDITIONING HEADQUARTERS FOR 35 YEARS

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F. O. B.

SHORT LEAF YELLOW PINE AND DOUGLAS FIR
All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Box.
(Prices in Bold Face)
All Fir boards, dimension, planks No. 2, Fir small timbers and timbers is No. 1. Lengths up to 80 ft.
(Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rsk	6x12 Rsk	12x12 Rsk
Atlanta	† **$70 00**	**$71.00**	**$60.00**	**$62.00**	**$65.00**	**$68.00**	**$70.00**	.....	.....
Baltimore	**63 00**	**68.00**	**60 00**	**60 00**	**60 00**	**65 00**	**80 00**	.....	.....
	76.00	*76.00*	*76.00*	*76.00*	*76.00*	*76.00*	*84.50*	*72.00*	*72.00*
Birmingham	**73 00**	**76 00**	**63 00**	**65.00**	**68.00**	**75.00**	**85 00**	.....	.....
	65.00	*65.00*	*65.00*	*65.00*	*65.00*	*65.00*	*81.00*	*81.00*	*81.00*
Boston	86.00	86.91	91.00	91.00	91.00	96.00	.....	.....	.....
	91.93	*91.93*	*93.95*	*81.83*	*81.83*	*101.103*	*101.103*	*101.103*	*101.103*
Chicago	‡ **80/83**	**82/84**	**72 74**	**81/83**	**84/85**	**85/87**	**90 00**	.....	.....
	‡ *81/85*	*85/86*	*83/84*	*83/84*	*85/86*	*85/87*	*87.00*	*91/93*	*91/93*
Cincinnati	**82.50**	**83.00**	**83.00**	**83.00**	**83.00**	**98.00**	**123 00**	.....	.....
	110.00	*115.00*	*95.00*	*105.00*	*110.00*	*115.00*	*125.00*	*125.00*	*125.00*
Cleveland	**82.50**	**84.50**	**68.75**	**80.75**	**82.75**	**84.75**	*85.00*	*85.00*	*85.00*
Dallas	† **54 00**	**60.00**	**60 00**	**53 00**	**55 00**	**57 00**	**90 00**	.....	.....
Denver	*Not in stock*		*86.00*	*85.00*	*85.00*	*85.00*	*104.00*	*114.00*	*112.00*
Detroit	**80 00**	**82.00**	**68 50**	**79 00**	**83.00**	**83 00**	.....	.....	.....
	88.00	*82.50*	*82.00*	*82.00*	*81.00*	*80.00*	.....	.....	.....
Kansas City	**100.00**	**100.00**	**90 00**	**95.00**	**95 00**	**100.00**	**110.00**	.....	.....
	¢ *85.00*	*85.00*	*90.00*	*95.00*	*90.00*	*90.00*	*100.00*	*125.00*	*125.00*
Los Angeles	* *72.00*	*72.00*	*72.00*	*72.00*	*72.00*	*72.00*	*82.00*	*92.00*	*82.00*
Minneapolis	‡¢ *100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*120.00*	*120.00*	*120.00*
Montreal	*ab* 70.00	74.00	70.00	72.00	75.00	83.00	.....	.....	.....
	140.00	*140.00*	*140.00*	*140.00*	*140.00*	*140.00*	.....	*135.00*	.....
New Orleans	† **55.00**	**70.00**	**70.00**	**75.00**	**75 00**	**70.00**	*85.00*	.....	.....
	† *68.70*	*68.70*	*71.00*	*75.00*	*72.50*	*72.50*	*87.00*	*87.00*	*100.00*
New York	‡ **90/97.50**	**93.00/100**	**82.50/87.50**	**87.50/92.50**	**90. 95.**	**95/100**	**97.50/102.50**	.....	.....
	‡	.....	*Range from $92.50 to $97.50*				*87.50/107.50*	*105/115*	*105/115*
Philadelphia			**Range from $88.00 to $97.00**				**88/97**	.....	.....
			Range from $105.00 to $115.00				105/115	*105/115*	*105/115*
Pittsburgh	† **75/80**	**75/80**	**75/80**	**75/80**	**75/80**	**75/80**	**100 00**	.....	.....
	† *90/100*	*90/100*	*90/100*	*100/110*	*100/110*	*100/110*	*120/130*	*120.00*	*120.00*
St. Louis	1¢ **89.25**	**91.50**	**78.00/82.50**i	**87.75**i	**90.00/94.25**k	**92.00**e			
	1¢	.....	*93.75/98.50*j	*98.50*e	*98.50*e	*98.50*e	*110.00*	*132.00*	*127.00*e
San Francisco	† *68.00*	*68.00*	*68.00*	*66.00*	*66.00*	*65.00*	*65.00*	*65.00*	*65.00*
Seattle	† *62.50g*	*62.50g*	*62.50g*	*62.50g*	*62.50g*	*62.50g*	*62.50g*	*62.50g*	*62.50g*

† F.o.b. mill. ‡ Delivered. ¢ Retail-LCL. * Yard prices.

LUMBER: **Bold Face type, Southern Pine.** *Italics, Douglas Fir.* a Spruce b Tax exempt. c 5M lots. d 8-12 ft. lengths. e 8-16 ft. lengths. f 18 ft. or under. g No. 1 common. h 10-12 ft. lengths. i 8 ft. lengths. j 10-16 ft. lengths. k 12-14 ft. lengths.

PLYWOOD: Special concrete form grade Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ¾", $145.00; on ½", $170.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. a Lower rate by water shipment. b 50,000 lb. minimum.

* Freight rate increase of 6¢ per cwt., not included in these figures.

LONG LEAF Y. P. Merchantable grade up to 20 ft.

2x12 Rsk	12x12 Rsk
.....	.....
120.00	120.00
.....	.....
115.00	125.00
.....	.....
114.00	114.00
.....	.....
114/116	114/116
.....	.....
118.00	128.00
.....	.....
.....	.....
83.00	90.00
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
100.00	105.00
190/220f	190/220f
.....	.....
180.00	180.00
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....

PLYWOOD Rail freight increment* (See note for base price)

⅜"	¾"
$22.32	$27.24
22.86	27.90
.....	.....
21.78	26.58
.....	.....
22.86	27.90
.....	.....
18.72	22.80
.....	.....
21.78	26.58
.....	.....
22.20	27.12
18.72	22.80
13.92	16.98
21.78	26.58
.....	.....
16.56	20.16
.....	.....
13.38ab	16.26ab
16.56	20.16
.....	.....
.....	.....
18.72	22.80
.....	.....
22.86	27.90
.....	.....
22.86	27.90
.....	.....
22.56	27.48
.....	.....
18.72	22.80
.....	.....
10.08a	12.30a
.....	.....

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS: Discounts from jobbers list, Jan. 16, 1946a Single or Double Thickness A quality	B quality	EXPLOSIVES: Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*
Atlanta	76%	76%	$0.2025
Baltimore	66-10%	67-10%	.2025
Birmingham	67%	67%	.1575
Boston	60%i	60%i	.2025
Chicago	67%	67%	.2025
Cincinnati	66-10%e	66-10%e	.2025
Cleveland	66-10-10-10%	66-10-10-10%	.2425
Dallas	65%	65%	.215
Denver	67%	67%	.2075
Detroit	66-10-10%	66-10-10%	.2025
Kansas City	65%e	65%e	.2075
Los Angeles	58%	63%f	.21
Minneapolis	64%	64%	.2075
Montreal	40-5%bc	40-10-5%bc	19.55h
New Orleans	68%	68%	.2125
New York	71%	72%	.32g
Philadelphia	69%	70%	.2025
Pittsburgh	70%	70%	.175
St. Louis	70-10%	70-10%	.2075
San Francisco	66%	73%	.2075
Seattle	54%	55%	.21

Price of 60% Ammonia Gelatin is $0.0125 per lb. higher than 40%

Glass: a Jobbers' list price per box, 14 x 20, as, $20.75 for A quality, $18.00 for B quality; 14 x 20, ds, $30.75 for A quality, $26.00 for B quality. b Discount from list, Sept. 1939; sales tax included, but 6% tax exemption not allowable for. c Single thickness. e Discount from list of Aug. 15, 1938. f ss; ds—62%. i Double thickness 65%.

Explosives: * Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. g In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $9.00 per trip. h F.o.b. city per 100 lb. forcite, 40%. Forcite 60%, $21.30.

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.155	$0.1825	$0.2025
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.16 – 1675	.1875– 20	.2075– 22
Rocky Mtn. States	.16 – 1725	.1875– .20	.2075– 225
Pacific N. W. States	.1575– 17	.19 – .2025	21 – .2225
Pacific S. W. States	.155 –.1625	.1875– .195	.2075– .2175

PILES, TIES F. O. B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail: Pine*	Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.43	....
12-in.— 2-ft. from butt	6-in.	50 to 59-ft.	.46	....
12-in.— 2-ft. from butt	6-in.	60 to 69-ft.	.50	....
12-in.— 2-ft. from butt	6-in.	90 to 100-ft.	....	.79
13-in.— 3-ft. from butt	5-in.	91 to 100-ft.	....	.80
14-in.— 2-ft. from butt	6-in.	50 to 69-ft.	.50	.87
14-in.— 2-ft. from butt	6-in.	70 to 79-ft.	.54	.81
14-in.— 2-ft. from butt	5-in.	80 to 85-ft.	.67	.82
14-in.— 2-ft. from butt	5-in.	85 to 89-ft.	....	.83
14-in.— 2-ft. from butt	5-in.	90 to 100-ft.	....	.87

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie for carload lots:		6"x8"x8' Untr.	6"x8"x8' Tr.	7"x9"x8'6" Untr.	7"x9"x8'6" Tr.
Boston	Oak	.....	.....	.....	.....
	Pine	.....	.....	.....	.....
New York	S. L. Sap Pine	$1.65	$2.85	$2.00	$3.30
	Mixed Oak	1.80	3.05	2.50	3.60
Birmingham	Hardwood	1.00	1.60a	....	2.25a
Chicago	Red Oak	.....	2.50/2.60a	....	3.52/3.45a
Los Angeles	Douglas Fir	.....	3.00a	.....	.....
	Redwood	1.86	.....	.....	.....
Philadelphia	Red Oak	2.33	3.13a	3.10	4.25a
St. Louis	White Oak	2.70	.....	3.45	.....
	Red Oak	2.60	3.30a	3.35	4.10a
	Sap Pine or Cypress	3.20a	.....	4.00	.....
San Francisco	Douglas Fir	1.28c	2.24f	1.70hf	3.05caf
Montreal	Birch or Maple	....h	....h	....h	....h

Tr.— Treated; Untr.— Untreated. a Creosoted. b 7" x 9" x 8'. c Empty cell. e Green. f F.o.b. cars. h No constant price available. i Not available

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb.	$4.50
Chlorine cylinders, liquid, per lb. f.o.b. works	.07–.12
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, f.o.b. works, ton	22.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb.	1.80
Soda ash, 58%, in paper bags, per 100 lb. dense	1.35
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.50
Sulphate of copper, in bags, 99% per 100 lb f.o.b. works	7.00

Midget Speedway at Indianapolis, Ind., has Safety-Beam installed around circumference of track. Contractor: James H. Drew Corp., Indianapolis, Ind.

WHERE DANGER LURKS...

THAT'S THE PLACE FOR SAFETY-BEAM

Safety-Beam installed on new approach to famous Pulaski Skyway, near Newark, N. J. Contractor: S. J. Groves & Sons Co., Woodbridge, N. J.

Safety-Beam protects motorists using this bridge on Glenville-Baxley Road, in Georgia. Contractor: Scott Construction Co., Thomasville, Ga.

Wherever there's a danger point along a highway — a sharp turn, embankment, bridge approach or other source of hazard — that's the place for Bethlehem Safety-Beam Guard Rail.

Bethlehem Safety-Beam Guard Rail is ideal for protecting traffic because of its strength and ability to absorb impact. The rail consists of heavy sections of steel plate in a channel-type design, bolted together on either steel or wood posts to form a continuous, impact-absorbing beam. What happens when a vehicle strikes Safety-Beam? Impact is absorbed by several adjacent posts, rather than one post, thus making it next to impossible for the vehicle to break through the rail.

Safety-Beam Guard Rail is easily visible day and night. It normally comes in 12 ft, 6 in. lengths, but is also furnished in lengths up to 50 ft. It can be installed economically, even by unskilled labor, for it fastens to the post with only one bolt. No end anchor rods, special tools or complicated adjustments are required.

Folder 545 shows standard details and assembly plans for Bethlehem Safety-Beam Guard Rail. Write for a copy.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

STEEL FOR HIGHWAYS

Dowel Units • Reinforcing Bars • Guard Rail Posts Bar Mats • Guard Rail • Wire Rope and Strand Hollow Drill Steel • Spikes • Bolts and Nuts • Pipe Sheet- and H-Piling • Fabricated Structural Steel Timber Bridge Hardware • Tie-Rods

BETHLEHEM STEEL

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION — SCORED Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE — LOAD BEARING — SCORED Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK Per M. in quantity Common backing	Straight hard	LIME Per ton, in paper, Carload lot, Hydrated finishing	Common hydrated	Pulverized, or lump
Atlanta	.....	.....	.....	.....	.....	.....	$25.00	$25.00	$19.00	$17.50	$17.50
Baltimore	$175.00	$185.00	$325.00	$380.00	.....	.....	32.00[k]	35.00[k]	26.00	20.00	.....
Birmingham	97.50	104.00	195.00	231.00	.....	.....	20.00[gf]	22.50[gg]	24.74	16.30	.....
Boston	140.00[t]	149.00[t]	280.00[t]	317.00[t]	.....	.....	32.00[a]	35.00[a]	30.80[t]	26.40[t]	.....
Chicago	115.00	122.50	230.00	.....	.....	.....	21.00	23.00	28.50	23.00	.....
Cincinnati	168.00[j]	178.00[j]	238.00[jdd]	328.00[f]	.....	.....	32.50[j]	38.00[g]	22.25[j]	20.50[j]	.....
Cleveland	118.00[ee]	126.00[ee]	236.00[ee]	.....	.....	.....	28.50	28.50	24.00	22.00	27.50[ss]
Dallas	.....	110.00	.....	.....	.....	.....	18.75	33.25	28.00	22.00	.....
Denver	.....	.....	.....	.....	.....	.....	32.00	32.00	34.80[bb]	28.00[bb]	34.00[bb]
Detroit	117.08	124.88	234.15	234.15	$290.68	$332.20	30.00[ee]	31.50[ee]	28.00	28.00	.....
Kansas City	115.00	125.00	.....	.....	.....	.....	22.00[o]	25.00[o]	36.00[p]	30.00[p]	30.00[p]
Los Angeles	[r]	[r]	[r]	[r]	[r]	[r]	30.00[§]	.....	.....	36.00	32.00
Minneapolis	158.00[p]	176.00[p]	330.00[p]	176.00[wp]	.....	.....	30.00[wp]	34.00	35.00[bbhe]	26.00[bbe]	35.00[bbde]
Montreal	115.00[aq]	125.00[aq]	225.00[aq]	.....	.....	.....	25.50	35.50	23.50[u]	.....	.....
New Orleans	160.00	160.00	300.00	.....	.....	.....	29.00	.....	27.50[ii]	18.00[ii]	37.50
New York	118.20[h]	126.00[h]	173.00[ch]	189.50[hs]	.....	.....	33.00	.....	34.40	26.80	.....
Philadelphia	126.30	134.80	252.60	302.74	361.35	455.74	27.00	30.00	31.00	19.50	24.50
Pittsburgh	98.00	105.80	181.85	207.30	265.35	303.60	26.00	38.00[y]	20.45	16.25	2.97[m]
St. Louis	120.00	138.50	252.50	252.50	339.50	.....	32.50[al]	30.50[al]	.60/.80[aaap]	.60[aaap]	1.00[aaepee]
San Francisco	132.00[a]	148.50[a]	198.00[dda]	148.50[ta]	.....	.....	32.00	.....	24.95	24.95	2.49[m]
Seattle	150.00[ee]	160.00[ee]	.....	160.00[eew]	.....	.....	32.00[s]	39.00[s]	34.00[hhh]	34.00[hhh]	3.60[mhh]

† F.o.b. [a] Smooth. [b] Per 50 lb. bags. [c] 6 x 12 x 12 in.-3 cell. [d] Pulverized hot. [e] 5% 10th following month. [f] 5½ x 8 x 12. [h] F.o.b. trucks, job site N.Y.C. [i] F.o.b. warehouse only. [j] Truck load or over. [k] $1.00 discount. [l] Red face. [m] Per bbl., 180 lb. [n] 7½ x 7½ x 12. Speed tile. [o] F.o.b. Buffalo. [p] Truck lots. [q] Provincial and Municipal tax extra. [r] Not used because of earthquake danger. [s] 2% discount for cash. [t] 5½ x 8 x 11½. [u] Tax exempt. [w] Sand lime. [w] 5 x 8 x 12. [y] Stacked. [z] Pebble lime price per 80 lb. sack [aa] Price per sack. Lime not sold per ton. [bb] LCL. [cc] Truck delivery. [dd] 6 x 12 x 12. [ee] Pebble lime. [ff] 80% common. [gg] Select. [hh] LCL. [ii] 15 tons or over. [§] F.o.b. plant.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 600-lb. (Approx.) bbl. Dry [a]	WHITE LEAD Per 100 lb. in 100 lb cases In oil [c]	READY-MIXED PAINT Per gal., drums Graphite [b]	Aluminum [e]	Ferrie Oxide [d]	ROOFING SUPPLIES Carload lots f.o.b. factory Rolls, slate surfaced, 85-90 lb per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb. per gal.	Asphalt coating 60 lb. bbl. per gal.	Tar pitch 360 lb. bbl. per ton
Atlanta	$16.00	$26.375	$1.75	$2.70	$1.65	$2.06[‡]	$2.06[‡]	$2.06[‡]	$1.00[‡]	$36.00[‡]
Baltimore	15.75	26.00	2.10	4.27	2.80	2.96	3.94	3.94	.55	36.00
Birmingham	16.00	26.375	3.90	3.40	....	2.80	2.75	2.75	.48	40.50[ee]
Boston	15.75	26.00	....	....	....	2.68	....	2.67[‡g]	.36	34.00
Chicago	15.75	26.00	....	....	....	2.34[‡s]	2.54[‡o]	2.54[‡o]	34.00[‡bb]	37.00[‡]
Cincinnati	15.75	26.00	....	3.03	....	2.31[‡]	2.41[‡o]	2.41[‡o]	.35[y‡]	42.00[‡]
Cleveland	15.75	26.00	2.80	2.75[s]	2.35	2.32	2.41[o]	2.41[o]	.30[y]	34.00
Dallas	15.00	26.75	....	4.05	....	3.50[q]	3.75[q]	4.35[q]	.36	46.00
Denver	16.25	26.50	2.63	4.38	2.48	3.20[o]	2.20[o]	2.20[o]	.41[ff]	40.00
Detroit	15.75	26.00	2.50/2.60	3.00/3.40	2.50/2.60	2.21	2.29	2.29	....	33.00
Kansas City	15.75	26.125	....	....	....	1.65[e]	....	2.80	.315[y]	.....
Los Angeles	15.75	26.25	2.80	3.75	3.80	2.41	1.91[o]	[i]	.45	[i]
Minneapolis	15.75	26.185/28.55	....	....	....	2.20[idd]	2.29[idd]	2.29[idd]	.336[idd]	34.00[rdd]
Montreal	.....	22.00	3.75[t]	4.20[t]	3.62[t]	3.25[r]	3.00[tf]	3.00[tf]	.85[t]	2.80[tt]
New York	15.75	26.00	3.45[y]	....	3.45[y]	2.32	2.41[o]	2.41[o]	.34[s]	35.00
Philadelphia	15.75	26.00	3.25	3.65	3.15	2.54	2.94	2.94	.37	26.00
Pittsburgh	15.75	26.00	2.00	2.00	1.90	2.90	2.90[o]	2.90[o]	.37	38.00
St Louis	15.75	26.00	....	....	....	2.25	2.42[h]	2.42[h]	.38	35.00
San Francisco	15.75	26.25	1.80	2.75[n]	1.35	2.27	3.30[aa]	....	.38[g]	....
Seattle	15.75	26.50	2.67[m]	2.67[m]	....	3.23[mqcc]	3.24[hmcc]	....	.49[mcc]	48.25[jmc]

‡ Delivered. Note: Red lead in oil 50c higher than white lead in oil. [a] Red lead prices change frequently due to pig lead price changes. [b] U. S. War Dept. Spec. 3-49A [c] ASTM Spec. D266-31. [d] 80% minimum ferrie oxide. [e] 5 lb. [f] Per 432 sq. ft. [g] Per oil. 65 lb. [h] Per cwt. [i] Net carload lot prices; Minneapolis and vicinity. [j] Asphalt pitch. [k] Per cwt. [l] Not used. [m] 1% discount for cash. [n] May, 1941 price. [o] Per 60-lb. [q] Per 90-lb. roll. [r] F.o.b. factory Chicago. [s] ASTM Spec. D226-41t [t] Federal tax included. [u] Per 90 lb. square. [v] Per ton. [w] Price to large paint contractors [x] $1.25 less. [y] Mineral surfaced. [y] 55-gallon container. [z] Drums [aa] Approximate cost per 100 lbs. [bb] Roofers coating and cement. Price per ton. [cc] LCL, truck delivery. [dd] 2% cash discount. [ee] Asphalt, in 100 lb. [ff] 5-gal. drums.

SKILLED AND COMMON WAGE RATES—PER HOUR

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor— Building	Heavy Const
Atlanta	$2.50	$1.85	$2.00	$2.00	$2.00	$2.00	$2.00	$0.85	$0.95
Baltimore	3.00	2.20[d]	2.55[e]	2.40/2.60	2.25	2.25	2.25	1.25	1.25
Birmingham	2.50	1.95	2.20	1.875	2.20	2.25	2.25	1.00	1.10
Boston	2.625	2.25	2.55	2.60	2.70	2.50	2.45	1.65	1.65
Chicago	2.55	2.45	2.50	2.45	2.55	2.525	2.45	1.80	1.80
Cincinnati	2.575	2.25	2.425	1.60/2.60	2.425	2.45	2.40	1.575	1.46
Cleveland	2.575	2.575[f]	2.575	2.525	2.525	2.525	2.575	1.85	1.725
Dallas	2.50[f]	2.125	2.25	2.25	2.50[f]	2.375	2.375	1.075	1.275
Denver	3.00	2.10	2.10	2.25	2.50	2.41	2.40	1.40	1.35
Detroit	2.625	2.325	2.575	2.575	2.625	2.60	2.50	1.675	1.675
Kansas City	2.60	2.15	2.30	2.375	2.75	2.30	2.375	1.575	1.575
Los Angeles	2.625	2.12	2.30	2.07	3.125[a]	2.50	2.50	1.57	1.57
Minneapolis	2.40	2.12	2.275	2.07	2.50	2.35	2.32	1.52	1.52
New Orleans	2.50	1.875	2.25	2.125	2.00	2.30	2.25	1.025	1.025
New York	3.20[f]	2.75[h]	3.00	3.00	3.20[a]	3.00[f]	2.75[h]	1.70	1.70
Philadelphia	3.00	2.34/2.40	2.65	2.50	3.00	2.75/3.00	2.75	1.375	1.675
Pittsburgh	3.00	2.50	2.625	2.65	2.625	2.575	2.50	1.50	1.50
St. Louis	2.833[c]	2.45	2.50	2.55	2.50	2.50	2.50	1.60	1.50-1.75
San Francisco	2.8125	2.225	2.50	2.19	2.8125	2.50	2.50	1.55	1.55
Seattle	3.00	2.195	2.395	2.33	2.495	2.395	2.50	1.795	1.83
Montreal*	1.40	1.25	1.30	1.20	1.40	1.35	1.15	.90	.80

[a] 6 hr. day. [b] 7 hr. day. [c] Incl. 3% vacation stamp fund eff. 7-49. [d] 5¢ hr. reduction pending a new 2-yr. contract. [e] 10¢ reduction eff. until May 1, 1950, when an increase of 10¢ hr. goes into effect. * Cost of living bonus now included in basic wage. [f] Includes 10¢ per hr. tool replacement. [h] Plus $5.00 daily bonus.

MEXICO CITY PRICES

In Pesos, F.o.b. City		Oct. '49	Nov. '49
Common Wages—Building (8 hr. day)	av. per hr.	.57	.57
Common Wages—Heavy (8 hr. day)	av. per hr.	.75	.75
Skilled Labor Wages			
Carpenters (8 hr. day)	av. per hr.	1.25	1.25
Bricklayers (8 hr. day)	av. per hr.	1.25	1.25
Struct. Iron Workers (8 hr. day)	av. per hr.	1.80	1.80
Struct. Steel Shapes			
3" - 18" x 12 meters	per ton	1,050.00	1,050.00
Reinf. Stee. Corr. Rods			
⅜" x 12 meters	per ton	1,150.00	1,075.00
½" x 12 meters	per ton	1,130.00	1,065.00
⅝" x 12 meters	per ton	1,120.00	1,055.00
¾" x 12 meters	per ton	1,110.00	1,045.00
⅞" x 12 meters	per ton	1,110.00	1,045.00
1" x 12 meters	per ton	1,110.00	1,045.00
Gravel, truck load of 3½ cu. meters			
Blue Gravel	per tr. load	35.00	30.00
Rose Gravel	per tr. load	35.00	28.00
Cement, Std. Port. (Toltecа)	per ton	115.00	120.00
Lumber			
Mex. Sacred Fir (Oyamel)	per M ft.	375.00	400.00
1st Class Pine	per M ft.	700.00	750.00
2nd Class Pine	per M ft.	400.00	480.00

ENR Skilled Average: (Bricklayers, Carpenters, Iron-workers) $2.462. **ENR Common Average:** $1.478.

Life expectancy dictates JENKINS VALVES *for the new John Hancock Building*

Architects: CRAM & FERGUSON, Boston, Mass.

Builders: TURNER CONSTRUCTION CO., Boston, Mass.

Contractors for Heating, Ventilating, and Air Conditioning
BUERKEL & CO., INC., Boston, Mass.

FROM TELEVISION MAST to sidewalk snow-melting system, the new John Hancock Mutual Life Insurance Company Building has been skillfully planned for operating efficiency and economy, now, and in the years to come.

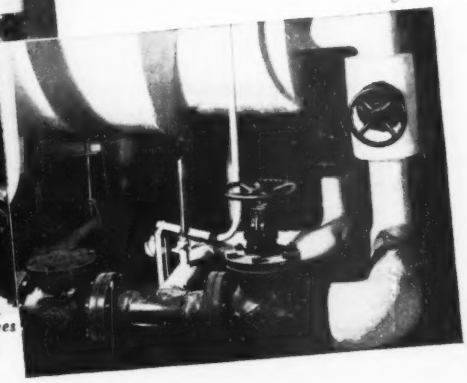
All equipment was chosen with an eye to the future—*future maintenance and operating costs.* It was on this basis that Jenkins Valves were selected.

Leading architects, engineers, and contractors have specified Jenkins Valves for the nation's most efficiently planned and operated buildings and plants for over 85 years. First, because they know that Jenkins builds extra endurance into valves—proved by long life and low upkeep cost records in every type of service. Second, because they know the value of the unequalled experience Jenkins Engineers can apply to any question of selection, installation, or maintenance.

Take the long view on valve economy . . . for new installations, for replacements, rely on Jenkins Valves for lowest costs in the long run. *Sold through leading Industrial Distributors everywhere.*

Jenkins Bros., 80 White St., New York 13;
Bridgeport, Conn.; Atlanta; Boston; Philadelphia; Chicago;
San Francisco. Jenkins Bros., Ltd., Montreal.

JENKINS
LOOK FOR THE DIAMOND MARK
VALVES
SINCE 1864
TRADE JENKINS MARK



Some of the more than 2500 Jenkins Valves installed in the John Hancock Building.

8 Why
Model
HD-10
86.63 drawbar hp.
Six speeds forward, to 6.03 m.p.h.; two reverse, to 4.15. Weight: 62" tread, 21,000 lbs.; 74" tread, 21,600 lbs. Available with large idler.

Let the Outstanding Advantages of These AHEAD-OF-THE-TIME Tractors Boost Your Production and Cut Your Costs...as They Have for Thousands of Owners

1 **1,000-HOUR LUBRICATION** of truck wheels, support rollers and idlers. You operate six months on a 40-hour week basis with just *one lubrication* . . . instead of daily, or even weekly, attention. Think what this means in labor and lubricant savings . . . and in working time gained! Think of the safety factor, too—no costly damage by greasing neglect.

2 **GENERAL MOTORS 2-CYCLE DIESEL ENGINE** Rugged, simple, economical, "hanging-on" power. Smooth — every down stroke a power stroke . . . less wear and tear on tractor and operator. Far less power loss than other engines at high altitudes.

3 **INTERCHANGEABLE ENGINE PARTS** Nearly all of the GM engine wearing parts are interchangeable with each of the GM engines on the various models of A-C tractors and motor graders—no matter the size. Lowers parts investment, simplifies maintenance for Allis-Chalmers fleet owners.

4 **INSTANT STARTING** GM 2-cycle diesel engines start as easily as your automobile . . . and they *start* and *operate* on *diesel fuel*. No need to let 'em idle during work-stop periods — no unnecessary engine wear or fuel waste.

Ask any owner...or arrange for a demonstration with your Allis-Chalmers dealer ..."SEEING IS BELIEVING"

Big Reasons

they're so popular

Model
HD-7

60.10 drawbar hp.
Four speeds forward, to 5.00 m.p.h.; reverse to 1.89. Weight: 52" tread, 13,830 lbs.; 63" tread, 14,000 lbs. Available with large idler.

5 **FAST MANEUVERING** 2-cycle diesel tractors are well known for their fast-working ability — not only for quickly traveling from cut to fill, but for turning around instantly in their tracks . . . and for easy maneuvering in and around tight places — especially important on bulldozing. Time saved is money made!

6 **PROPER BALANCE** Weight, speed and power are positively balanced in A-C tractors, assuring top performance on every job — pulling, pushing, lifting.

7 **OPERATOR COMFORT** All these advantages mean operator satisfaction, too — resulting in more work done more easily. Besides — he has a big, wide, comfortable seat, cushioned back, arm rests, roomy platform, convenient controls, good vision.

8 **MATCHED ALLIED EQUIPMENT** Each Allied manufacturer, skilled in his own field, works in complete cooperation with Allis-Chalmers in designing and building auxiliary equipment.

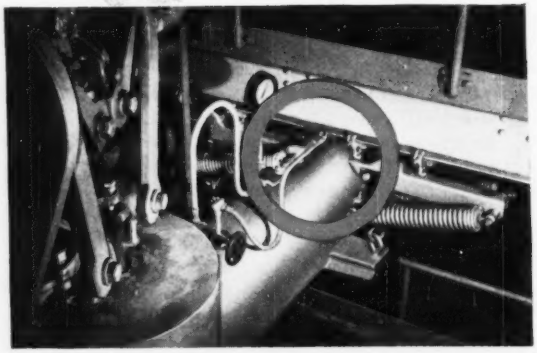
ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Originator of the Torque Converter Tractor

Which one of these pipe hangers is the right one . . . for this spot?

THIS BIG BOILER LEAD from a superheater outlet at the stop and check valve in a power station presents a critical problem in pipe suspension. From its position when cold to its position at 900°F., this piping travels through all three planes — vertical, lateral and longitudinal. That would set up dangerous stresses and strains if its great weight were not fully supported at every point of its travel by Grinnell Constant-Support Hangers. Your piping problems may be much less complicated but, whatever the problem, Grinnell offers you a complete service . . . Grinnell piping supplies, Grinnell engineering, Grinnell warehouse service, and Grinnell jobbers in practically every city and town.



GRINNELL

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager — *J. A. MAHONEY, Reports* — *M. R. ROESSLER, Statistics*

WATER SUPPLY

LOW BIDDERS

Md., Towson—Baltimore Co., Court House, Nov. 21, watermains, sewers, drains, Rodgers Forge and vicinity. Contr. 197 D. S. & W. from Ligon & Ligon, Inc., 3310 Ridgewood Ave., Baltimore, **$113,489.** CD 11/11.

SEWERS, WASTE DISPOSAL

Ill., Chicago—City, Dpt. Purchases Contracts & Supplies, City Hall, Nov. 22, auxiliary outlet sewers Paulina St. Sys. Contr. 2, from Michael Pontarelli, Inc., W. Congress and S. Laramie Sts., **$963,667.** CD 11/21.

BRIDGES

LOW BIDDERS

Alabama — State Hy. Dpt., Montgomery, Nov. 18, bridges 0.92 mi. on road from Chatom to Mississippi State Line, Washington Co., from Pigsford Bros. Constr. Co., Meridian, Miss., **$64,693;** bridge 0.179 mi. on road from Samson to the Ala. State Line, Geneva Co., from Scott Constr. Co., Thomasville, Ga., **$183,057.** CD 11/10.

†Missouri—U. S. Eng., 601 Davidson Bldg., Kansas City, Zone 8, Mo., Nov. 18, Milwaukee Bridge, Truman Bridge and Hawthorn pumping plants East Bottoms Unit, Kansas City, Mo., CIVENG 23-028-50-60, from L. G. Barcus & Sons, 1430 State Ave., Kansas City, Kan., **$353,077.** Est. $376,430. CD 10/27.

CONTRACTS AWARDED

†Wash., Bridgeport—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, 2,146 ft. steel bridge across Columbia River, between Chief Joseph Dam site, CIVENG 45-108-50-20, to Guy F. Atkinson Co., Skinner Bldg., Seattle, Zone 1, **$946,620.** Est. $908,047. Bids 11/8. CD 11/15, under LB.

Quebec—Dpt. P. Wks., Quebec City, bridge over Pickanock River, Gracefield, to George Gague Ltd., 1200 Sherbrooke St. W., Montreal. Approx. **$200,000.** O. Desjardins, c/o owner, engr.

STREETS AND ROADS

BIDS ASKED

December 21

†Wash., Brewster—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, 2.14 mi. access highway to Chief Joseph Dam site under Schedule A, involving clearing, grading, ballasting, crushed stone and drainage and Schedule B, asph. surf., Serial No. 50-38. Extended date. CD 11/18.

LOW BIDDERS

Alabama—State Hy. Dpt., Montgomery, Nov. 18, from Georgia-Alabama Road Constr. Co., Comer Bldg., Birmingham, double surf. 8.86 mi. County Rd. from Hayden to Nectar, Blount Co., **$293,224*****double surf. 11.094 mi. road from Garden City to Blountsville, Blound and Cullman Counties, $90,621; double surf. 6.377 mi. county road from Hartselle to Ala. 67 at Priceville, Morgan Co., **$107,121*****from J. B. Maynard, Alexander City, double surf. 8.56 mi. from State Rd. 46 at Pine Grove northeast to Lebanon, Cleburne Co., **$64,525;** single surf. 9.091 mi. road from Lafayette to Cussea, Chambers Co., **$54,273*****from Hugh Steel Constr. Co., Centre, single surf. and plant mix 3.849 mi. county road between Ala. 23 to U. S. 411 east of Centre, and double surf. from Leesburg south toward Livingston School, Cherokee Co., **$59,177*****from L. J. Cousins, 18 S. Lewis St., Montgomery, grading, drainage 6.577 mi. Clanton-Lay Dam Rd., Chilton Co., **$66,891*****from B. J. Williams Constr. Co., Ozark, double surf. 12.359 mi. on county roads from Ashford toward Cowarts Creek, Houston Co., **$72,675*****from Smith Eng. & Constr. Co., W. Pensacola St., Pensacola, Fla., double surf. 11.76 mi. Jackson-Coffeyville Rd., **$184,777***** from Baird & Latimore, Selma, bridges on above road, Clarke Co., **$63,902*****from L. I. Jarrell, Whistler, grading, drainage on road from Mobile toward Theodore, Mobile Co., **$214,298*****bridges on same road, from Cook Constr. Co., Standard Life Bldg., Jackson, Miss., **$103,548.** CD 11/10.

CONTRACTS AWARDED

New Jersey—State Hy. Dpt., Trenton, 1.264 mi. Palisades Interstate Parkway Sect. 3 B, from Palisades Ave. northerly 1.2 mi., Bergen Co., to A. J. Santaniello, Inc., 16 Whyte St., Jersey City, **$257,259.** Bids 11/23. CD 11/3.

EARTHWORK, WATERWAYS

BIDS ASKED

December 15

†Missouri—U. S. Eng., 1709 Jackson St., Omaha, Neb., agricultural levees unit L-550, Sect. 20, CIVENG 25-066-50-90. CD 11/2.

December 20

†Louisiana—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, Gulf Intracoastal Waterway, Mississippi River-Atchafalaya River Section and Atchafalaya River-Vermillion River Section, (maintenance dredging), location between Bay Wallace in Terrebon Parish, (Mile 80.-7 W. of Harvey), and Bayou Carlin in Iberia Parish, (Mile 139.1), CIVENG 16-047-50-137.

Missouri—Monarch-Chesterfield Levee Dist., c/o Bd. Supervisors, E. J. Beyer, chn., Chesterfield, raising, strengthening levees along Missouri River, western part St. Louis Co., area bounded by Chicago, Rock Island & Pacific R.R. tracks, on south, Missouri River on west and north and Bonhomme Creek on east. Extended date. E. P. Kronsberg, c/o Clayton Surveying & Eng. Co., 26-28 S. Central Ave., Clayton, St. Louis, Zone 5, engrs. CD 9/12.

December 21

†Washington—Bureau Reclamation, Coulee Dam, earthwork and structures Station 1229 plus 74 to Station 2044 plus 50, West Canal, Columbia Basin Proj., vicinity of Quincy, Spec. 2844. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

December 23

†Washington—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, dredging, repairs to breakwater at Lake Crockett, Fort Casey, CIVENG 45-108-50-30.

January 10

●†Kentucky—U. S. Eng., 630 W. Broadway, Louisville, flood protection works, Sect. B, Covington. Plans deposit $15.

LOW BIDDERS

†Illinois—U. S. Eng., 826 U. S. Courthouse & Customhouse, St. Louis 1, Mo., Nov. 17, approx. 1,620 lin. ft. timber piling clump dikes in Mississippi River at Fish Bend between River Miles 132.5 and 144, above the mouth of Ohio River, Monroe Co., CIVENG-23-066-50-30, from Central Eng. & Contg. Co., 3829 Pine Blvd., St. Louis 8, Mo., **$98,490.** Est. $84,649. (**Correction**—location of project) CD 11/25, under Mississippi, L.B.

†Illinois—U. S. Eng., 826 U. S. Courthouse & Customhouse, 1114 Market St., St. Louis 1, Mo., Nov. 22, East Alton Pumping Station, Wood River Drainage and Levee Dist., Proj. I-E, Madison Co., CIVENG-23-065-50-27, from R. & R. Concrete Co., Alton. **$179,990.** Est. $194,483. CD 11/3.

†Virginia—U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C., Nov. 22, maintenance and new work dredging, Rappahannock River, downstream from Fredericksburg and new work dredging of Bransons Cove, Lower Machodoc River, Serial No. CIVENG-49-080-50-31, from J. A. LaPorte, Wilson Blvd. and Barton St., Arlington. **$60,434.** CD 11/3.

CONTRACTS AWARDED

†Virginia, Florida and North Carolina—U. S. Eng., 308 Customhouse, Wilmington, N. C., dredging Atlantic Intracoastal Waterway between Norfolk, Va. and St. Johns River, Fla. and Beaufort Harbor, N. C., CIVENG-31-075-50-15, to Atkinson Dredging Co., Great Bridge, Norfolk, Va. **$79,499.** Bids 11/8. CD 10/25.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $28,000; other public works $50,000; industrial buildings $68,-000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	

Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.;

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
●	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

PUBLIC BUILDINGS

BIDS ASKED

December 14

Neb., Hastings—ADMINISTRATION—State Bd. Control, Lincoln, administration bldg. at Hastings State Hospital. $275,000. Extended date. CD 11/16.

December 15

●D. C., Wash—HIGH SCHOOL—Dist. Comrs., District Bldg., Spingarn High School for negro students, 24 St. and Benning Rd. N.E. $3,600,000. Merill A. Coe, District Bldg., municipal archt. CD 7/12/44.

Ga., Atlanta—HIGH SCHOOL—Fulton County Bd. Educ., Courthouse, Northside High School. Approx. $250,000. Plans deposit $25. Francis M. Daves & Assoc., 57 8 St. N.E., archts. CD 7/5.

Wash., Mercer Island—SCHOOL—School Dist. 400, Mercer Island, school. $340,000. Plans deposit $25. Naramore, Baine, Brady & Johnson, Dexter Horton Bldg., Seattle, Zone 4, archts. CD 12/30/48.

December 17

La., Jena—SCHOOL—LaSalle Parish School Bd., Jena, 53,000 sq. ft. Olla High School, Barron & Heinberg, Guaranty Bank Bldg., Alexandria, archts. CD 3/30.

December 19

Ga., Atlanta—HOSPITAL—Fulton-De Kalb Hospital Auth., c/o Abreu & Robeson, archts., 22 Marietta St. Bldg., hospital for negroes. Plans deposit $100. Extended date. CD 11/22.

December 20

Calif., San Mateo—ARMORY—State Div. Architecture, P. Wks. Bldg., Sacramento, 14,-000 sq. ft., rein.-con. Type C armory, mechanical and electrical work included. Plans deposit $25. Anson Boyd, Sacramento, state archt. CD 12/12/47.

December 21

Pa., Waymart—TUBERCULAR HOSPITAL—General State Auth., 18 and Herr Sts., Harrisburg, general contract, heating, plumbing and electrical work 2 story, brick tubercular hospital, at Fairview State Hospital. $600,-000. Plans deposit $10 general, $2.50 each others. George M. D. Lewis, 445 Kressler Court, Scranton, Zone 10, archt. A. F. Jones, c/o owner, ch. engr. CD 3/4.

December 29

●†N. M., Albuquerque—LABORATORY—U. S. Eng., P. O. Box 1538, 3 story, bamnt., 120,000 sq. ft. A-19 laboratory, Serial No. ENG-**391**-50-24. $1,250,000. Extended date. CD 11/15.

†Okla., Woodward—OFFICE-LABORATORY—Dpt. of Agriculture, Div. Purchase, Sales & Traffic, 14 St. and Independence Ave., S.W., Wash. 25, D. C., office-laboratory at U. S. Southern Great Plains Field Station, Job. No. 50004.

†Tenn., Oak Ridge—LABORATORY—U. S. Atomic Energy Comn., P. O. Box E, Attention. R. J. Dunbar, Eng. Div., Main Administration Bldg., Laboratory Bldg. 9213, in controlled area, Inv. No. 401-50-3A. Plans deposit $25. CD 9/12/48.

Tex., Bryan—POWER HOUSE—City, (2nd unit) electric power house, 5,000 kw. steam turbine type. $750,000. Plans deposit $50. Freese & Nichols & Turner, Natl. Standard Bldg., Houston, engrs. CD 9/29.

January

O., Xenia—SCHOOLS—Bd. Educ., R. J. Warner, supt., Xenia, two 1 story schools in North End and South End. Walker, Norwick & Templin, American Bldg., Dayton, archt. CD 11/11/48.

January 3

●Calif., Los Angeles—CHEMISTRY-GEOLOGY—Bd. Regents University of California, 405 Hilgard Ave., Los Angeles, 3 story, steel, reinforced brick, 150,000 sq. ft., chemistry-geology bldg. $3,000,000. Plans deposit $300. Gordon B. Kaufman, J. E. Stanton, 627 S. Carondelet St., archts. CD 7/23/48.

January 7

●†N. M., Los Alamos—DWELLINGS—U. S. Atomic Energy Comn., Los Alamos, 104 single and multiple dwellings, 182 individual housing units, frame superstructure, concrete fdn., Inv. No. 291-50-34. $3,000,000.

January 12

†S. C., Parris Island (Ind. Br. Beaufort)—WAR MEMORIAL—Officer Charge Construction, Pub. Wks. Dpt., Maritime Corps Recruit Depot, Parris Island, war memorial bldg. NOY 19119, Spec. 22880. Plans deposit $50.

January 30

Wash., Bellingham—LIBRARY—Bellingham Public Libraries, Bellingham, 2 story, 75x170 ft., rein.-con., brick, library $400,000. Naramore, Brady, Bain, & Johanson, Dexter

(Continued on page 88)

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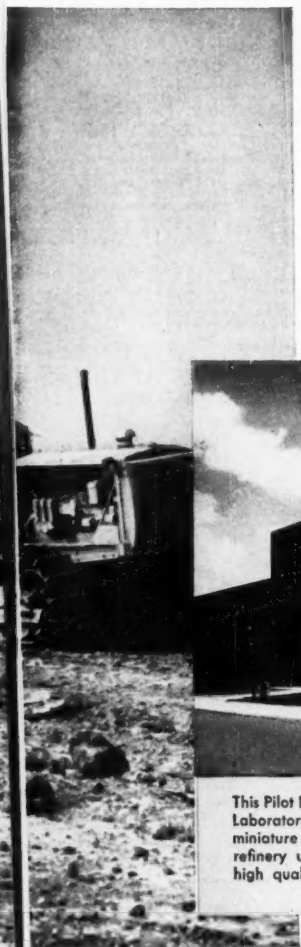

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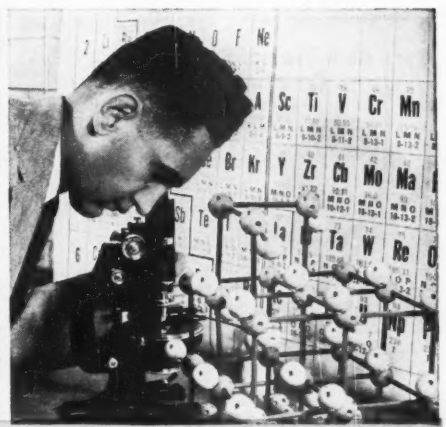

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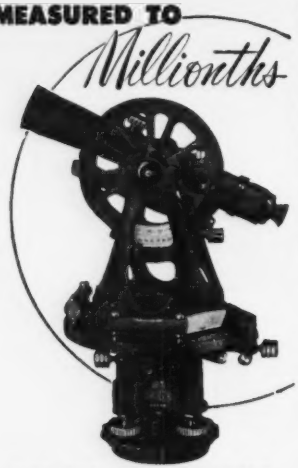

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(Continued from page 85)

Horton Bldg., Seattle, Zone 4, archts. CD 1/13.

March 15

N. J., Long Branch—DWELLINGS—City of Long Branch Housing Auth., Long Branch, 100 dwellings, $950,000. Braun & Mancuso Associated Architects, Garfield Court, Long Branch, archts.

LOW BIDDERS

Ala., Florence—SCHOOL—City, Nov. 16, school, from J. R. Harrison, Jacksonville. **$252,182.** CD 11/9.

Calif., Baldwin Park—SCHOOL—Baldwin Park School Dist., 173 Holt Ave., rejected bids Oct. 27, Intermediate School. $300,000. L. B. **$388,134.** New bid date Dec. 2. CD 11/10, under LB.

Calif., La Jolla—GYMNASIUM—San Diego School Dist., 825 Union St., San Diego, Nov. 22, 1 story, 30,000 sq. ft., rein.-con. gymnasium at La Jolla Junior and Senior High School, from Alliance Constr. Co., 35 N. Raymond St., Pasadena **$386,688.**, CD 11/16.

Conn., Middletown—SCHOOL—City, Charles A. Schaefer, chn. Bldg. Comn., Nov. 21, brick, steel school, Westfield St., from Earl C. Wheeler, 3 Lewis St., Hartford, **$255,426.** Est. $250,000. CD 11/9.

Ky., Louisville — SCHOOL — Bd. Educ., 506 W. Hill St., Zone 8, Nov. 23. MacArthur Elementary School, Southland Blvd., and Old Third St. Rd., from F. W. Owens Co., 119 N. Fifth St., **$906,270.** CD 11/18.

Mass., Needham — SCHOOL — Town, Wm. Bailey, chn., Town Hall, Nov. 18, William Mitchell Elementary School, Brookline St., Needham Heights, from Vara Constr. Inc., 718 Huntington Ave., Boston. **$386,000.** W. G. Upham, 700 Washington St., Norwood, archt. CD 11/2.

Mo., Kansas City—HOME—Jackson Co., c/o R. H. Van Ness, 207 County Court House, Nov. 21, imprv. McCune Home for Boys, from S. Patti Constr. Co., 1340 Admiral St., Kansas City, Mo., **$704,186.** CD 11/4.

N. Y., East Setauket—SCHOOL—Bd. Educ., Union Free School Dist. 2, East Setauket, Nov. 22, school, from Matthew L. Carroll, Inc., 101 Park Ave., New York, Zone 17, **$557,000.** CD 11/4.

N. C., Greensboro—DORMITORY—Agricultural & Technical College for Negroes, F. D. Bluford, pres., Greensboro, Nov. 22, 3 story, 1,800 cu. ft., men's dormitory, from H. L. Coble, Greensboro, **$980,700.** CD 10/31.

Tenn., Knoxville—HIGH SCHOOL—City, Nov. 15, Rule Junior-Senior High School addn., from J. A. R. McMurry Constr. Co., 408 W. Clinch Ave., **$410,306.** CD 11/9.

CONTRACTS AWARDED

Ala., Anniston—SCHOOL—City, Junior High School, to Jones & Hardy, Montevallo. **$732,-594.** Bids 10/27. CD 11/9, under LB.

Ark., Magnolia—DORMITORY—Magnolia A. & M. College, Magnolia, general contract 100 room dormitory, to M. O. Branton Constr. Co., Gazette Bldg., Little Rock. **$339,756.** Bids 11/21. CD 11/4.

Calif., Bakersfield — DETENTION HOME — Bd. Supervs. Kern Co., Courthouse, 1 story, rein.-con., brick Juvenile Detention Home, to Guy E. Hall, 210 30 St., **$438,691.** Bids 11/21 CD 11/11.

Calif., Newport Beach—CLASSROOM—Newport Harbor Union High School Dist., Costa Mesa, 2 story, rein.-con. classroom bldg., to Allison-Honer Co., 103 E. 3 St., Santa Ana, **$295,814.** Bids 11/22.

†Fla., Orlando—LABORATORY—U. S. Navy Dpt., Pub. Wks. Officer, Naval Base, Charleston, S. C., underwater sound reference laboratory, on Deep Lake, near here, to R. E. Clarson, 2000 13 Ave. N., St. Petersburg, **$844,-000.** Bids 11/22, awarded 11/23. CD 11/28, under LB.

Ind., New Albany—SCHOOL—Bd. School Trustees, New Albany, 1 story, bsmnt. 30x241 ft., brick, rein.-con., structural steel Ellen Jones School, to Mann Constr. Co., 422 E. Market St., New Albany. **$265,747.** Bids 11/8, awarded 11/12. CD 10/26.

Ky., Louisville — HOSPITAL — Children's Hospital, 226 E. Chestnut St., childrens hospital addns., alterations, to Sullivan & Cozzart, W. Kentucky St., Zone 2. **$736,615.** Est $1,200,000. Bids 11/17, awarded 11/23. CD 1/23.

Mass., Boston — INFIRMARY — Commonwealth of Mass., Dpt. Mental Health, 100 Nashua St., Proj. P-M 38, infirmary and extension of tunnel and services, State School, Belchertown, to Vara Constr. Co., Inc., 718 Huntington Ave., **$706,706.** Bids 10/21, awarded 11/18. CD 10/27, under LB.

●Va., Arlington—HIGH SCHOOL—Arlington Co. School Bd., 2732 Wilson Blvd., approx. 1,600,000 cu. ft. Vacation Lane Junior High School between Old Dominion Dr., Vacation Lane and 23 St. N., near Military Rd., to Wise Contrg. Co., 8 and Grace Sts., Richmond. **$1,452,721.** Bids 11/17, awarded 11/19. CD/23, under LB.

COMMERCIAL BUILDINGS

BIDS ASKED

December 14

●Fla., Pensacola — HOSPITAL — Pensacola Baptist Hospital, c/o Charles H. McCauley, archt., Jackson Bldg., Birmingham, Ala., hospital. $1,200,000. Former bids rejected. CD 4/4/46, under LB.

December 15

Kan., Ft. Leavenworth—HOUSING—Dpt. Army, Fifth Army, 1660 E. Hyde Park Blvd., Chicago, Ill., construct, manage and finance 150 unit housing development. CD 11/18.

Bids Asked

Tex., Houston — SHOPPING CENTER — MacGregor Park Homes, Inc., c/o J. E. Leicher, 2402 Arbor St., addnl. shopping center, $750,000. L. Gabert & W. J. Wisdom, 1315 Bell St., engrs.

SOON LETS CONTRACT

Ala., Shawmut — RESEARCH CENTER — West Point Mfg. Co., Shawmut, soon lets contract research center, $250,000. Warren, Knight & Davis, Protective Life Bldg., Birmingham, archts. **(Correction**—status.) CD 9/9, under CA.

Mass., Dorchester—SCHOOL—Boston College High School, 21 St. James Ave., Boston, soon lets contract 2 story, bsmnt., brick, stone, high school and athletic field. Approx. $250,000. Maurice Reidy, 101 Fremont St., Boston, engr. CD 10/4.

Tex., Houston—STORE—J. Weingerten, Inc., 808 Prairie St., soon lets contract commercial store, 20 and Yale Sts., $750,000. Finger & Rustay, 711 Natl. Standard Bldg., engrs. CD 11/15.

LOW BIDDERS

●Tex., Houston—HOSPITAL—Arabia Temple Shrine, AAONMS, 1322 Prairie St., cancelled bids to have been opened Nov. 29, 8 story, bsmnt, 277 bed-crippled childrens hospital. **$2,500,000.** CD 10/26.

CONTRACTS AWARDED

Ala., Birmingham—HOMES—Garber, Cook & Hulsey, c/o Earl O. Murray, archt., Clark Bldg., Birmingham, 69 homes, to C. P. Wright Constr. Co., c/o architect. Approx. **$300,000.**

Ala., Mobile—APARTMENT UNITS—E. N. Meriwether, c/o Pembleton & Mims, archts., Title Guarantee Bldg., Birmingham, 83 apartment units. Owner builds. Approx. **$300,000.**

Calif., East Los Angeles—OFFICE—Fluor Corp. 2500 S. Atlantic Blvd., concrete office, to Wm. P. Nell Co., 4814 Loma Dr., Los Angeles, Approx. **$250,000.** George Schreiber, 4814 Loma Vista Ave., Los Angeles, archt.

Calif., Inglewood — DWELLINGS — J. C. Dunar, c/o E. H. Fickett, archt., 5678 Wilshire Blvd., Los Angeles, 50 frame, stucco dwellings. Owner builds. **$400,000.**

●Calif., Los Angeles—APARTMENT—Gloria Homes, c/o M. H. Fleishman, archt., 8844 W. Olympic St., Beverly Hills, 423 unit apartment, La Brea Ave. and Rodeo Rd., to Republic Constr. Co., 1618 N. Las Palmas St. Approx. **$3,000,000.** **(Correction**—contractor). CD 10/19.

●Calif., Los Angeles—DWELLINGS—Sherman Park Development Co., 1150 S. Beverly Dr., Beverly Hills, 142 frame, stucco dwellings. Owner builds. **$1,203,200.** Ed H. Fickett, 5678 Wilshire Blvd., Los Angeles, archt.

●Calif., Redondo Beach—DWELLINGS—Pan Pacific Investment Co., 7052 Santa Monica Blvd., Los Angeles, 165 frame, stucco dwellings. Owner builds. **$1,361,250.**

Calif., South Gate—DWELLINGS—Firestone Manor, 9434 Long Beach Blvd., 107 frame, stucco dwellings, Orr and Day Rd., to Biltmore Homes, 9434 Long Beach Blvd., South Gate. Approx. **$750,000.**

Conn., Stratford — HOUSING — Stratford American Legion Drum & Bugle Corps., 2159 Main St., 25 or more family unit single frame houses, Legion Manor, Greenfield Ave. and Nichols Terrace. Owner builds, **$250,000.**

Fla., Orlando — CHURCH — First Baptist Church, c/o contractor church, to Stevens & Sipple, Orlando. Approx. **$250,000.**

Ind., Indianapolis—STORE—Equitable Life Assurance Society, 29 S. LaSalle St., Chicago 3, Ill., substructure, 3 story, bsmnt., 235,000 sq. ft. store, Monument Circle, to Carl M. Geupel Constr., 1109 Hume Mansur Bldg., **$400,000.** Awarded 11/12. CD 2/18.

Md., Hyattsville—CHURCH—First Baptist Church, 43 Ave. & Gallatin St., church, Longfellow St. and 42 Ave., to Martin Bros., 1609 Connecticut Ave. N.W., Wash., D. C. **$250,-000.** awarded 11/19. Paul Kea, Professional Bldg., archt.

Mass., Dorchester — HOSPITAL — Carney Hospital, old Harbor St., South Boston, hospital, Dorchester Ave., adjacent to Dorchester Park, to Walsh Bros., 150 Hampshire St., Cambridge, approx. **$250,000.** Awarded 11/18, J. R. Nichols & P. W. Norton, 285 Columbus Ave., Boston, engrs. CD 7/3.

Mich., Detroit—OFFICE—Union Bldg. Corp., 7930 E. Jefferson St., 3 story, 180x180 ft. structural steel, stone masonry, concrete office for V. A. W. Union Workers, to John Cooley Co., 509 Fox Bldg., **$750,000.** Awarded 11/23.

N. Y., Douglaston—HOMES—Berry Homes, Inc., c/o Samuel Paul, archt., **163-18 Jamaica** Ave., Jamaica, 53 one-family houses, 52 Ave., 248 St., E. Marathon Parkway, Thornhill Ave. and 54 Ave. Owner builds. **$424,000.**

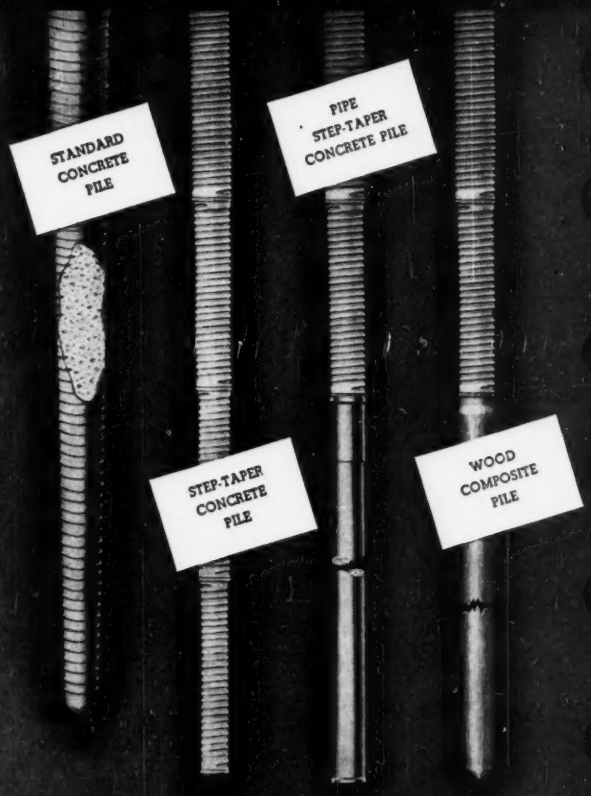
O., Toledo—BUNGALOWS—Cuthcher Constr. Co., 1981 Tremainesville Rd., 30 or more low cost bungalows, Ascot and Kopernik Aves. Owner builds. Approx. **$250,000.**

Tenn., Memphis—APARTMENT—Longview Apartments, Inc., c/o Margolin Bros., 1028 N. Hollywood St., apartment development. Owner builds. **$800,000.**

Tex., Borger—HOTEL—Board of Directors, c/o Cantrell & Co., archts., Pampa, 7 story, bsmnt., concrete, steel, brick, hotel, steam heating, to Von Frellick, Inc., P. O. Box 209, San Angelo, **$612,630.** Est. $500,000. Bids 9/29, awarded 11/19. CD 10/7, under LB.

(Continued on page 92)

OUTSTANDING ADVANTAGES OF RAYMOND CONCRETE PILES



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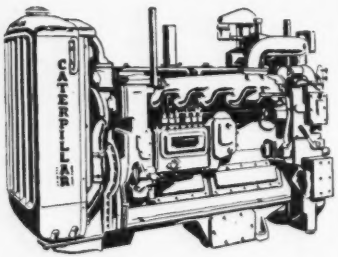
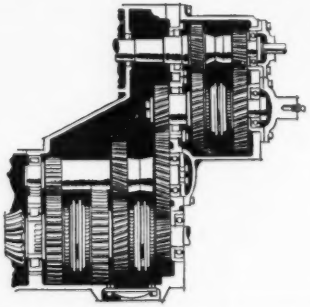
PRECISION BLADING . . . calls for the balanced design and matched performance of an all-"Caterpillar" Motor Grader.

•

Standard "Caterpillar" Diesel Motor Graders are priced as follows: No. 12, $10,920; No. 112, $9545; No. 212, $6435, all prices f.o.b. Peoria, Illinois, subject to change without notice.



ENGINE. The sturdy, dependable, heavy-duty all-"Caterpillar"-built No. 12 Motor Grader Diesel Engine is designed to function as a unit with all other parts of the machine. It has ample speed-and-power to give peak performance—plus ruggedness to meet the gruelling requirements of motor grader operation. Solid aluminum alloy main and connecting rod bearings are important reasons why these engines are so long-lived.



TRANSMISSION. The "Caterpillar" No. 12 Motor Grader transmission is a *constant-mesh helical gear transmission* specially designed and fitted to heavy-duty motor grader use. Yet it shifts with "pleasure car" ease. This, combined with great inherent strength, adds to production ability and motor grader life. Typical of "Caterpillar" quality is the independent gear-type lubricating oil pump which keeps every transmission gear bathed in a full supply of filtered oil.

ARE *BUILT*—NOT "ASSEMBLED"

Every "Cat" Diesel Motor Grader is *"Caterpillar"-built through and through* —from front wheels to rear—from complete engine to transmission to final drive. All mechanical parts are designed and fitted together for matched performance, correct balance, proper weight distribution, and long life. "Caterpillar" design, engineering and construction are all aimed at helping you get the utmost out of your motor grader investment. The records prove it . . . 99% of all "Caterpillar" Motor Graders ever built are *still on the job!*

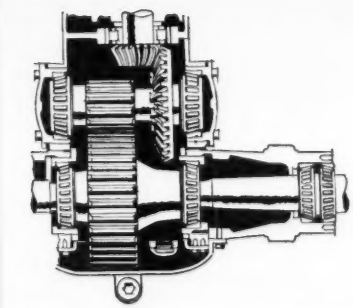
Your "Caterpillar" dealer can give you plenty of additional facts and figures. Meantime, write for new booklet, "'Cat' Motor Graders Do the Job."

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

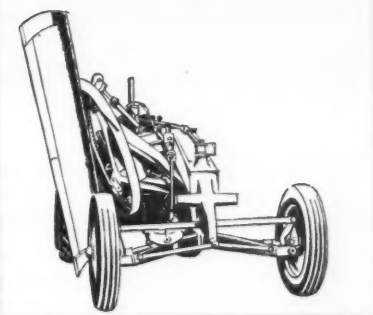
CATERPILLAR

REG. U.S. PAT. OFF.

DIESEL ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT



FINAL DRIVE. Heavy-duty engine and transmission require rugged but simple final drive system to keep the motor grader at top working efficiency. Engine horsepower is converted into maximum tractive effort and earthmoving volume through this simple, sturdy system. Tapered bearings throughout keep friction losses at a minimum.



BLADE MECHANISM. The "Caterpillar" Motor Grader frame and blade system fully matches the sturdy in-built quality of the "Cat" Diesel Engine, transmission and final drive. Blade working positions like the one shown here can be made by the operator without leaving his position at the wheel. Mechanical powered controls are unaffected by temperature changes.

Here's the Economy Pump designed for your big-volume requirements . . . from irrigation to condenser circulation. Delivering 200,000 gallons a minute this Economy Axial Flow Pump can tap a cloudburst or tame a flood.

Supplied in sizes from 500 to 200,000 G. P. M., Economy Horizontal and Vertical Axial Flow Pumps are low in cost, simple in design and compactly constructed. Built to meet individual specifications these Economy Pumps can be furnished in corrosion-resisting alloys if required.

For details on design advantages, write Dept. CB-12 for Catalog G-845.

Economy Pumps Inc.

DIVISION OF HAMILTON THOMAS CORP. HAMILTON, OHIO

VACUUM CONCRETE

Most economical for use in Precast Walls, Floors, Roofs, Beams and Columns. It doubles the speed.

Vacuum Lined forms can be reused as many as eight times in one day.

Vacuum handling equipment strips castings from molds and handles them without breakage.

Write for information

VACUUM CONCRETE INC. 4210 SANSOM ST. PHILA. 4, PA.

(Continued from page 88)

Tex., Houston—DWELLINGS—W. Edward Brown & Assoc., 3625 Locke Dr., 100 dwellings, own forces. **$475,000.** CD 11/29/48.

Tex., San Antonio—HOUSING—Harlandale Housing Corp., 6108 S. Flores St., addnl. housing, own forces. Approx. **$300,000.** CD 11/21.

Tex., Longview—CHURCH—First Baptist Church Congregation, Longview, church to J. A. Sharrock, Marshall. **$547,000.** Bids 11/8, awarded 11/21. CD 11/15, under LB.

Tex., Port Arthur—MERCANTILE—Sears, Roebuck & Co., 815 Arnold St., Dallas, mercantile bldg., to Templeton & Cannon, 209 Central Bank Bldg., San Angelo, **$519,000.** Bids 9/29. CD 10/11, under LB.

●Wash., Moses Lake—DWELLINGS—Nelse Mortensen & Co., Inc., 1021 Westlake Ave., Seattle, construct, manage and finance 1, 2, and 3-bedroom single family dwellings for enlisted men and officers at Air Force Base, for Dpt. Air Force, Pentagon Bldg., Wash., D. C., **$3,500,000.** Stuart & Durham, 1100 Denny Way, Seattle, archts.

Que., Montreal — APARTMENTS — Western Realties, Inc., 5333 Pare Ave., five 16 suites, 46x80 ft., concrete, brick, steel apartments, Walplay Ave. Owner builds. **$500,000.** R. Chalifoux, 6275 Papineau Ave., archt.

INDUSTRIAL BUILDINGS

BIDS ASKED

December 14

Ga., Rossville — PLANT — Peerless Woolen Mills, Rossville, (closed list of bidders) finishing plant addn. Approx. $100,000. Robert & Co. Assoc., 96 Poplar St. N. W., Atlanta, archts.

December 19

Wis., Menomonee Falls—FACTORY, etc.—Stolper Steel Products Corp., 258 W. Fond du Lac Ave., Milwaukee, Zone 10, 1 story, 235x420 ft., 57x127 ft., 48x78 ft., steel, brick, concrete block factory and office, concrete fdn. and floor. Grassold & Johnson, 734 N. Jefferson St., Milwaukee, Zone 2, archts. CD 12/30.

January 6

Ky., Freeburn—TIPPLE, etc.—Red Arrow Coal Co., Freeburn, tipple and chute.

Conn., Wethersfield—PLANT—Taylor & Greenough Co., 74 Union Pl., Hartford, 1 story, 18,000 sq. ft., brick, steel color printing plant, Silas Deane Hy. Approx. $68,000. Irving Rutherford, 182 High St., Hartford, archt.

Wis., Two Rivers — FACTORY — Hamilton Mfg. Co., 1216 18 St., 4 story factory addn. W. Fred Dolke, 189 W. Madison St., Chicago, Ill., engr.

SOON LETS CONTRACT

Ill., North Chicago—LABORATORY, etc.—Abbott Laboratories, Sheridan and 14 Sts., soon lets contract 5 story, brick, laboratory and warehouse, Naess & Murphy, 80 E. Jackson Blvd., Chicago, archts.

Mo., St. Louis—WAREHOUSE—Artophone Corp., 4200 Forest Park Ave., Zone 8, soon lets contract brick, concrete, steel warehouse, service and office bldg. CD 8/24.

N. M., Lovington—POWER PLANT——Lea County Electric Co-operative, Inc., Lovington, soon lets contract 16,000 sq. ft. steel frame, electric power plant and concrete fdn. $150,000. Continental Engineers, Inc., 1310 Avenue Q, Lubbock, Tex., engr. CD 4/18.

Pa., Washington — GARAGE — Chartiers Motor Co., Washington, soon lets contract 2 story, 65x164 ft. concrete block garage, 20 S. Franklin St., $125,000. Gary Dickson, 22 Main St., archt.

S. C., Arcadia — MILL — Mayfair Mills, Arcadia, soon lets contract, mill addn. J. E. Sirrine Co., Greenville, archt.

Tex., Houston—DAIRY PLANT—Foremost Dairies, Inc., 1706 Washington St., soon lets contract dairy plant, $275,000. H. K. Ferguson Co., M & M Bldg., archts. Extended date. CD 10/27.

Tex., Houston—SHOP—H. U. Garrett, 3753 Drake St., soon lets contract mechanical repair shop. $85,000. Taylor Milton, 2615 Fannin St., engr.

Tex., Kerrville — PLANT — American Pure Milk Co., Kerrville, soon lets contract 2 story, masonry milk plant, cold storage vault, concrete, frame and fdn., tile cooling tower, $100,000. Addis Noonan Assoc., 803 American Hospital & Life Bldg., San Antonio, engrs. and archts.

LOW BIDDERS

Minn., Elk River—GENERATING PLANT—Rural Co-operative Power Assn., Maple Lake, Nov. 18, superstructure of generating plant, from Steenberg Constr. Co., W. 1628 First National Bank Bldg., St. Paul. **$412,000.** CD 11/10.

Okla., Oklahoma City—PLANT—Oklahoma Industries, Inc., J. E. Fair, mayor, First Natl. Bldg., Zone 2, Nov. 21, paint mfg. plant, from The De Witt Co., Tuloma Bldg., Tulsa, Zone 2. **$76,753.** Est. $90,000. Eagle-Picher Paint & Varnish Co., lessee. CD 11/9.

Tex., League City—WAREHOUSE—T. A. Kilgore & Co., League City, Nov. 8, warehouse, from L. D. Moore, League City. **$71,000.** CD 10/24.

(Continued on page 95)

THE BASIC STEP FOR SOUND CONSTRUCTION

AMCRECO
Creosoted PRODUCTS

DEPENDABLE SERVICE

LONG LIFE

MAINTENANCE ECONOMY

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When you build for permanence, it's hard to beat the long life expectancy and dependability of Amcreco pressure treated material even under the severest conditions. On all types of construction jobs, Amcreco products provide the answer to year around economy . . . low first cost, minimum maintenance, years of service. Amcreco engineers will gladly help you plan for permanence at low cost . . . write for information.

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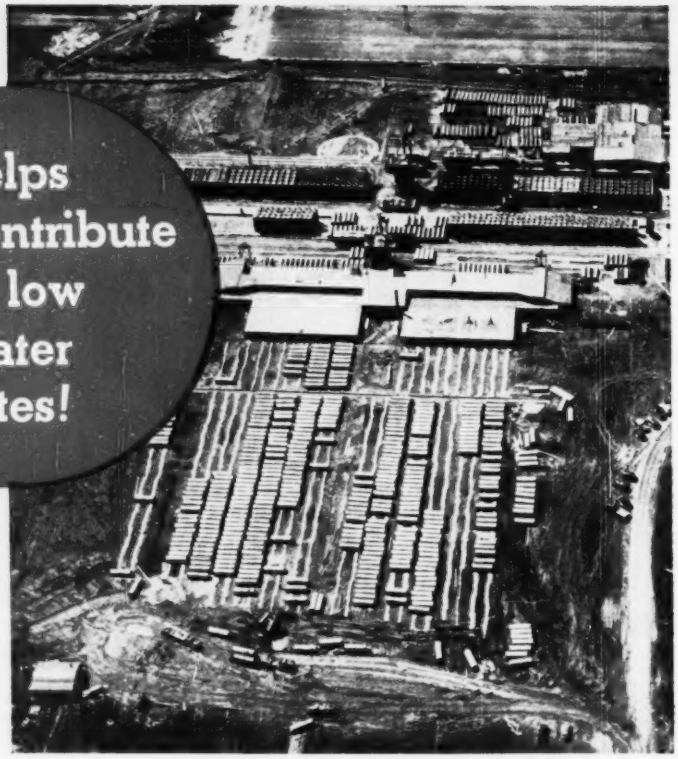
LOCK JOINT PIPE helps contribute to low water rates!



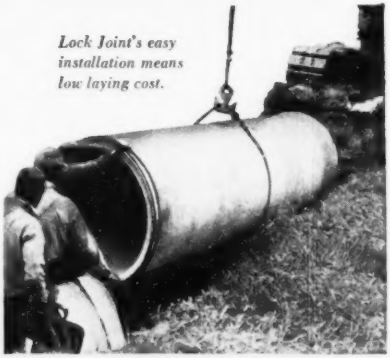
A temporary Lock Joint pipe plant at the site. Use of local labor and materials returns to the community a large part of the pipeline cost.

Although a modern water supply system represents a sizeable investment, sound engineering makes it possible to keep water rates at a minimum.

Knowing this, economy-minded water supply engineers specify Lock Joint Reinforced Concrete Pressure Pipe for mains of 16" or larger. Lock Joint's low initial cost, its long life, its exceptionally high carrying capacity and its negligible maintenance cost assure the utmost service for the consumer's dollar.

Water works officials who have installed Lock Joint pipe lines point to these lines as the most economical in their entire systems.

We shall be glad to discuss your requirements. Simply write or call our nearest office.



Lock Joint's easy installation means low laying cost.

LOCK JOINT PIPE COMPANY

Est. 1905

P.O. Box 269, East Orange, N. J.

PRESSURE PIPE PLANTS: Wharton, N. J. • Turner, Kan. • Detroit, Mich.

BRANCH OFFICES: Cheyenne, Wyo. • Denver, Colo. • Kansas City, Mo. • Valley Park, Mo. • Chicago, Ill. • Rock Island, Ill. Wichita, Kan. • Kenilworth, N. J. • Hartford, Conn.

SCOPE OF SERVICES—Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

LOCK JOINT
Reinforced Concrete
PRESSURE PIPE

(Continued from page 92)

●**Tex., Longview**—PLANT—East Texas Electric Steel Co., c/o Roy A. Hearne, exec. dir., Longview, cancelled bids, commercial sponge iron plant, near here. **$1,000,000.** CD 9/23.

CONTRACTS AWARDED

Calif., Lawndale—PLANT—Armored Trunk Mfg. Co., 2528 S. Santa Fe Ave., Los Angeles, 100x340 ft., reinforced brick plant, to F. S. Macomber, 8818 Melrose Ave., Los Angeles, **$78,700.** Est. $80,000. Sam Reshard, 1109 N. Vermont Ave., Los Angeles, archt. Wm. Parush, 306 W. 3 St., Los Angeles, engr.

Calif., San Jose—WAREHOUSE—Security Warehouse Corp., 1260 Campbell St., warehouse, to Carl N. Swenson Co., 1095 Stockton Ave., Approx. **$87,000.**

Conn., Hartford—WAREHOUSE—Sparveri Brothers, Windsor St., 1 story, brick, concrete warehouse with garage facilities, Windsor St. Owner builds. **$68,000.** Hollis W. Kincaid, 171 Washington St., archt.

Conn., New Canaan—WAREHOUSE—Katzenbach & Warren, Inc., 49 E. 53 St., New York, N. Y., 2 story, 75x100 ft., rein.-con. masonry steel warehouse incl. office space, Pine St., to John Zandonella, 70 Chase St., Bridgeport. Approx. **$80,000.** CD 11/1.

Fla., Auburndale—PLANT—Clinton Foods, Inc., Dunedin, plant. Owner builds. **$400,000.** B. C. Skinner, Dunedin, archt.

Mo., St. Louis—STRUCTURE—Anheuser-Busch, Inc., 721 Pestalozzi St., Zone 18, 75x190 ft., open steel supporting structure for 120 glass-lined steel tanks, and 3 story, 25x75 ft., exten. for stairs, hall, elevators, etc., to Fruin-Colnon Contr. Co., 1706 Olive St., Zone 3. Approx. $200,000. A. J. Berkel, c/o owner, archt. Wm. C. E. Becker, Ambassador Bldg., 411 N. 7 St., Zone 1, engr.

Mo., St. Louis—SHOP—Borbein-Young & Co., 3763 Forest Park Blvd., Zone 8, 1 story, 67x90 ft., brick, concrete automobile repair shop addn., 3663 Forest Park Blvd., to Zeppenfeld, Inc., 632 South Meramac Ave., Zone 5, Clayton.

Mo., St. Louis—TERMINAL—Service Lines, Inc., 631 South Broadway, Zone 2, 1 and 2 story, 30x140 ft. truck terminal, office and loading dock, 514 S. 4 St., to V & M. Contr. Co., Inc., 4030 Chouteau Ave., Zone 10.

Mo., St. Louis—WAREHOUSE—Star Bedding Co., 3908 North Broadway, Zone 7, 1 story, 40x107½ ft., rein.-con. brick, warehouse addn., 3908 Broadway, to S. P. Shukofsky Constr. Co., 1062 Purdue St., University City. L. Haeger, 3844 Utah Place, Zone 16, archt.

Mo., St. Louis Co.—PLANT—Majestic Building Materials Corp., 8601 Page Ave., Overland, St. Louis, Zone 14, 1 story, steel, concrete, ready-mix concrete plant, incl. tanks steel bins and conveyor, etc., on Missouri Pacific R. R. tracks about 1,000 ft. S. E. of U. S. Rte. 66, in Grantwood Section of St. Louis Co., separate Contracts.

●**N. Y., Buffalo**—STAMPING PLANT, etc.—Ford Motor Co., 3000 Schaefer St., Dearborn, Mich., 1 and 2 story, 933x1,040 ft., rein.-con. brick, masonry, structural steel metal stamping plant and office, at Hamburg, to Bryant & Detwiler Co., 2304 Penobscot Bldg., Detroit, Mich. Approx. **$1,250,000.** Awarded 11/16. CD 8/19.

Tex., Amarillo—WAREHOUSE—Amarillo Amarillo Hardware Co., Amarillo, warehouse, to Floyd Richards, Amarillo. **$105,705.** CD 11/23.

Tex., Freeport—PLANT FOUNDATION—Dow Chemical Co., Freeport, rein.-con., steel fdn. for ammonia plant, to The Austin Co., M & M Bldg., Houston. Approx. **$475,000.** CD 2/3/47.

Tex., Corpus Christi — SLAUGHTERING PLANT—Henry Starnes, 2002 North Port St., stusage and cattle slaughtering plant, own forces. Approx. **$90,000.** CD 6/23/47.

Tex., Pettus—PLANT—United Gas Pipe Line Co., Alamo Natl. Bldg., San Antonio, dehydration plant, to Brown & Root, Inc., Box 3, Houston. **$375,000.** CD 11/23.

Tex., San Antonio—PLANT—Federal Envelope Co., 535 S. Flores St., envelope plant, to C. L. Browning, Jr., Tex. Bldg., **$99,860.** Bids 11/18. CD 11/23, under LB.

Wis., Milwaukee — WAREHOUSE — General Box Co., 100 N. Marshall St., Zone 2, 1 story, 97x118 ft., steel, brick warehouse, to Roland H. Becker, Elm Grove. Approx. **$110,000.**

●**Wis., Milwaukee** — STOCKHOUSE — Miller Brewing Co., 4002 W. State St., Zone 8, 10 story, 86x145 ft., rein.-con. brick stockhouse addn., steel piling, to W. W. Oilfein, Inc., 5345 N. Hopkins St., Zone 9, Approx. **$2,000,000** incl. equip. CD 11/2.

Wis., West Bend—FACTORY—Gehl Bros. Mfg. Co., West Bend, 1 story 86x180 ft., steel, concrete block factory addn., concrete fdn. and floors, to Winninghoff & Bradley, 124 N. Main St., R. H. Bierman, 3402 W. Thurston Ave., Milwaukee, Zone 9, archt.

Ont., Etobicoke—FACTORY—Jaymouth Industries, Ltd., The Queensway, Etobicoke, factory addn., to F. W. MacLachlan Ltd., 195 Fairbank Ave., Toronto, Approx. **$75,000.**

UNCLASSIFIED

December 14

Ohio — RURAL DISTRIBUTION LINES — Carroll Electric Cooperative, Inc., Carrollton, 13.61 mi. conversion, 0.37 mi. new line, 0.46 mi. of 33 KV rural distr. lines and labor only constr. substation and located in Carroll and Tuscarawas Counties. Proj. Ohio 84G, Carroll. Blue Grass Engineers, Inc., 2700 E. Main St., Columbus 8, O., engr. CD 4/7/48.

About December 22

†**N. M., Alamogordo**—UTILITIES, etc.—U. S. Eng., P. O. Box 1538, Albuquerque, utilities and roads for family quarters, Phase II (Holloman AFB-91), Serial No. Eng-29-005-50-21.

December 22

Calif., Ventura—PIER—State Div. Hys., 120 South Spring St. Los Angeles, repairing Ventura Pier, at foot of Fir St., Ventura Beach State Park. G. T. McCoy, Sacramento, state hy. engr.

†**Oregon**—TRANSMISSION LINE — Bonneville Power Admin., 729 N. E. Oregon St., Portland, clearing right-of-way for McKinley-Bandon 115 kv transmission line, Coos Co., Inv. 4902. Plans deposit $5.

January

O., Kent—STADIUM—Kent State University, George A. Bowman, pres., Kent, initial unit of Memorial Stadium with steel deck stands and wooden seats, with 4,500 seat capacity on south side of football field. $60,000. CD 8/10.

January 5

†**North Dakota** — TRANSFORMERS, etc.—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., transformers for Advance Power System REA Cooperatives, North Dakota, Transmission Div., Missouri River Basin Proj. Spec. 2813. Extended date. CD 11/16.

January 10

†**California**—SWITCHBOARD, etc.—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo. 1 automatic telephone switchboard and 1 cordless desk-type manual telephone switchboard, with power and ringing equip. code-calling equip., distributing frame, and telephones for use in conjunction with switchboards at Parker Dam Power Plant, Spec. 2847. L. N. McClellan, ch. engr.

Bids Asked

O., Cincinnati—RAILROAD SIDING, etc.—Englander Co., Inc., 2447 Roosevelt Rd., Chicago, Ill., general contract, railroad siding and 1 story, brick factory.

SOON LETS CONTRACT

Missouri—RURAL DISTRIBUTION LINES—Black River Electric Co-operative, Ironton, soon lets contract, 213.7 mi. rural distr. lines, and 5 mi. conversion of lines in Washington, Iron, Reynolds, Bollinger, Cape Girardeau, Dent and Wayne Counties, $235,000. Frank Horton & Co., Lamar, engrs. CD 10/19.

Tenn., Chattanooga—MOTOR COURT—The Interstate Co., c/o Selmon T. Franklin, archt. 421 Poplar St., soon lets contract, motor court.

LOW BIDDERS

Calif., San Diego—SITE IMPRVS.—Roman Catholic Archbishop of San Diego, Nov. 22, site imprvs at San Diego Catholic University, from Griffith Co., Box G, Hillcrest Station, San Diego, **$139,899.** Frank Hope, Bank of American bldg., archt.

Calif., Los Angeles—LIGHTING SYSTEM—City, Nov. 23, electroller lighting sys. in Vermont Ave., Washington to Exposition Blvd., from State Constr. Co., 3428 Long Beach Blvd., **$51,765.** Est. $50,000. CD 11/16.

†**D. C., Wash.**—SWIMMING POOL—National Capitol Parks, Interior Bldg., Nov. 17, swimming pool and equip, revisions at Coolidge Recreation Center and Francis Recreation Center, from Lee T. Turner Co., 3616 14 St. N. W., **$112,846.** CD 10/24.

†**Idaho** — TRANSMISSION LINES — Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., Nov. 16, Anderson Ranch Dam-Mountain Home 115-kv transmission line. Spec. 2762, aluminum conductors or stranded copper conductor, from City Electric Co. 1001 Broadway and Morrison-Knudsen Co. 319 Broadway, Boise, aluminum conductor **$145,587,** est. $137,484, stranded copper inductor **$167,616,** est. $173,076, from McCann Constr. Co., Boise, copperweld-copper conductor **$169,312,** est. $180,314, L. N. McClellan, ch. engr. CD 11/1.

Ill., Chicago—SIGNAL EQUIP., etc.—City, Dpt. Purchases, Contracts & Supplies, City Hall, Nov. 17, installing signal and interlocking equip. Dearborn St. Subway, Contr. T-11, from Knott & Mielly, 327 S. La Salle St., **$437,748.** CD 10/27.

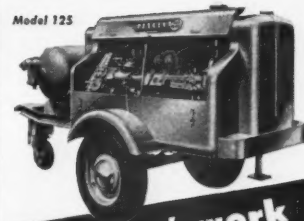
North Dakota—RURAL DISTRIBUTION LINES—McKenzie Electric Co-operative, Watford City, rejected bids Oct. 27, 332.1 mi. rural distr. lines, 12.5 mi. transmission lines and 10.5 mi. underbuilding, McKenzie Co. L. B. **$379,688.** CD 11/10, under LB.

†**Oregon**—TRANSMISSION LINE — Bonneville Power Admin., 729 N. E. Oregon St., Portland, Ore., clearing Lebanon-Goshen 230 kv power transmission line route, Inv. 4869, from McNutt Bros., Eugene. **$294,340.** CD 11/10.

S. C., Columbia—SWIMMING POOL—City, City Hall, Nov. 15, swimming pool in Seegers Park from J. W. Barnwell, Jr. Columbia, $72,000. CD 8/25.

(Continued on page 97)

Model 125



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with JAEGER "new standard" compressors

Jaeger Model 125 runs 2 heavy duty or 3 medium breakers at full 90 lbs. pressure, doing 30% to 40% more work than at 70 lbs. pressure from a 105 ft. machine.

Other Jaeger "new standard" sizes, 75, 185, 250, 365, and 600 ft., give you comparable work increases. Cost no more than smaller old sizes. Send for Catalog and prices.

THE JAEGER MACHINE CO.
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Rolling Doors
for
ANY INDUSTRIAL NEED!

Whether needed in a large steel mill . . . or simply at a small warehouse loading-platform . . . KINNEAR can supply steel rolling doors to fit any requirement. These steel interlocking-slat curtains rise straight up and coil compactly above the lintel! And when shut they supply extra protection against fire, theft and the elements. Available with push-button motor operation from one or several strategic points. Write for details.

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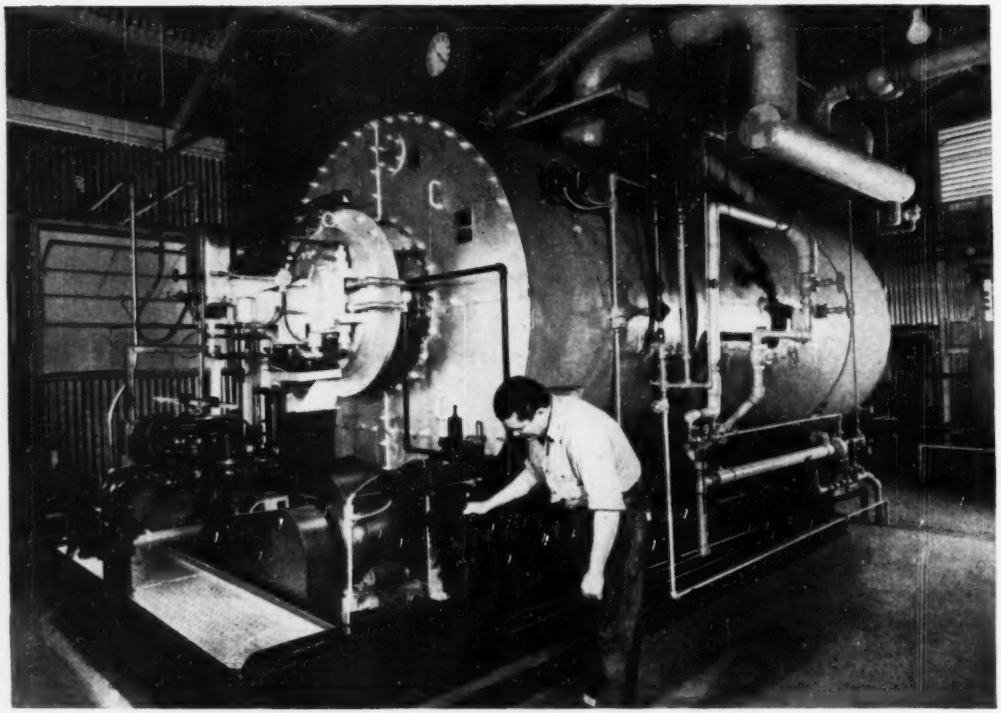
KINNEAR ROLLING DOORS

Boiler HORSEPOWER Isn't Enough



Modern Boilers must have EARNING POWER, too

BECAUSE the cost of generating steam — for processing, production or heating needs — demands a substantial share of your operating budget, you can't afford to be complacent about your boiler.

If you want to cut fuel and maintenance costs, look to your boiler. Look beyond boiler horsepower ratings and rate your boiler in terms of its *earning power* for you — its ability to deliver steam at lowest cost.

For any boiler installation (15 to 500 HP.) — new or replacement — Cleaver-Brooks offers these immediate and long range cost saving advantages:

A Custom-Planned Boiler Engineered for Your Needs: Your steam needs and steam-using equipment are studied — your present total steam load plus your estimate of future expansion are considered — with this information the size of Cleaver-Brooks boiler best suited to your specific needs is determined.

Factory Starting Service: Your boiler is placed in operation by Cleaver-Brooks factory service-engineers. Your operators are trained in operation, care and maintenance.

Flexible Operation Burning Gas or Oil With Equal Efficiency: You can use oil, gas, or combination oil and gas, whichever is of lower cost. Through high heat transfer, Cleaver-Brooks boilers operate at a guaranteed efficiency of 80% from full load down to 30% of rating.

In addition, Cleaver-Brooks boilers give you clean, smokeless operation — eliminate fuel and ash handling — require no high or costly stacks — no special foundations — fit under low headroom—provide quick steaming, flexible operation to meet fluctuating loads — fully meet all codes.

Available in sizes 15 to 500 HP., 15 to 200 P.S.I. — write for Cleaver-Brooks steam boiler bulletin.

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WRITE on your business letterhead for Steam Cost Calculator — a ready reference slide rule showing comparative steam costs when using oil, gas, or coal as fuel. Mailed on request—no obligation.

Cleaver-Brooks
STEAM BOILERS

(Continued from page 95)

Tex., Corpus Christi—PARK IMPRVS.—Nueces Co., Courthouse, Nov. 14, Park Proj. 3, on Padre island, waterlines, asph. road surf., fishing pier, guard posts, etc. from Bauer-Smith Dredging Co., Port Arthur, **$138,-896** est. $115,000; Park Proj. 4, on Padre Island, comfort stations, fishing pier, playgrounds, service bldgs., garbage disposal units, etc., from Middleton & Goldston Constr. Co., 918 E. Port St., **$79,184** est $120,000. CD 10/28.

Que., Levis—WHARF—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., Nov. 23, wharf reconstruction, from McNamara Constr. Co., Ltd., 42 Industrial St., Leaside, Approx. **$757,995.** CD 11/9.

Que., Miguasha—WHARF, etc.—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., Nov. 23, wharf and breakwater imprvs., from Capt. J. Romeo Allard, Matane, Approx. **$108,762.** CD 11/1.

Que., Mont Louis—WHARF—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., Nov. 23, wharf exten., from B. Joucois, Matane, Approx. **$162,076.** CD 11/10.

CONTRACTS AWARDED

Mo., Moberly — DRIVE-IN THEATRE — Lyric Theatre Co., Salisbury, drive-in theatre. Owner builds, **$60,000.**

Nebraska—RURAL DISTRIBUTION LINES—Madison County Rural Public Power Dist., Battle Creek, 250 mi. rural distr. lines, Madison Co., to Douglas Contractors, Keeline Bldg., Omaha, **$287,520.** Bids 11/17. CD 11/7.

Texas—GAS PIPELINES—United Gas Pipe Line Co., Alamo Natl. Bldg., San Antonio, 34 mi. gas gathering lines, near Cuero, De Witt and Goliad Counties, and 12 mi. 16 in. gas loop line to connect with San Antonio main line, near Goliad area, to Brown & Root, Inc., Box 3, Houston, Approx. **$215,000** and **$165,000** respectively. CD 11/23.

●**Vermont**—DAM—New England Power Co., 441 Stuart St., Boston, Mass., Wilder Hydro-Electric Dam in Connecticut River to United Engineers & Constructors, Inc., 1401 Arch St., Phila. Pa., **$16,000,000.** Work underway. CD 3/3/47.

Ont., Brockville — ARENA — Municipality, 90x190 ft., concrete, steel memorial center arena, to M. Sullivan & Son, Ltd., 234 Elgin St., Armprior, **$209,447.** Drever & Smith, 81 Brock St., Kingston, archts. CD 1/25/45.

Ont., Grafton — ICE ARENA — Recreation Center Comn., E. J. Lawless, pres., 70x192 ft. concrete, wood, aluminum ice arena, to T. A. Wilson Lumber Co., Ltd., 7 St. John, Cannington. Approx. **$70,000.**

Que., Val D'Or—SPORTS CENTER, etc.—Olympia Palace, Inc., 748 Third Ave., sports arena and community center to Paul L. Ecuyer, 34 Wolfe St., Approx. **$450,000.** CD 9/15.

PROPOSED PROJECTS

WATER SUPPLY

Calif., Pittsburg—City, City Hall, defeated **$425,000** bonds, water reservoir, E. L. O'Hara, City Hall, city engr. CD 10/5.

Kan., Hugoton—City, voted **$168,000** bonds, WW extens. Ediger Eng. Co., Admin. Bldg., Municipal Airport, Wichita, engr. CD 10/19.

La., Vinton—City, City Hall, voted **$175,000** bonds WW. imprvs. CD 9/26.

Mass., Mansfield—Town of Mansfield, Managers Office, water sys., addn. of 2 wells, gravel packed wells pump house an electric works, supply lines addn. **$200,000.** Whitman & Howard, 89 Broad St., Boston, engrs.

O., Coldwater—Village, Village Hall, voted **$125,000** bonds. WW imprvs. CD 2/21/46.

Okla., Cushing—City, voted bonds, WW extens. **$400,000.** John Davidson, c/o owner, engr. CD 10/25.

S. C., Charleston—Comrs. P. Wks. and St. Andrew's Pub. Serv. Dist., Charleston, exten. City WW in St. Andrew's Parish. **$300,000.** Francis B. McDowell, Jr., 14 George St., engr. CD 7/3/45.

●**Tenn., Clarksville** — City, Clarksville, voted bonds, filtration plant and intakes. **$1,200,000.**

Tex., Katy — Humble Oil & Refining Co., Humble Bldg., Houston, reconstruct 70 ft. high water cooling tower, at recycling plant, near here. **$250,000.**

●**Tex., Lubbock**—City, water storage, **$1,000,-000**; water supply, **$595,000**; c.i. waterlines and sys. rehabilitation, **$1,500,000** (4 year expans. program). G. K. Harris, c/o owner, city mgr.

Tex., Snyder — City, water supply extens. **$150,000**; water distr. lines, **$175,000.**

Wash., Seattle—City, County and City Bldg., Zone 4, watermains, in W. Othello St., **$186,-183**; Lucille St., **$40,396.** R. W. Finke, city engr.

Ont., Lindsay—Town, L. Gordon, chn. Bd. W. W. Comrs., filtration plant addn. and pump. station also new intake. Approx. **$275,000.** Proctor, Redfern & Laughlin, 11 Jordan St., Toronto, engrs. CD 11/3.

SEWERS, WASTE DISPOSAL

Calif., Fortuna—City, City Hall, voted **$140,-000** bonds sewage disposal plant.

●**Calif., San Jose**—Sanitation Dist. 4, c/o City Hall, voted **$1,640,000** bonds sewage disposal improvement, near Los Gatos. L. Cedric Macabee & Don. Reinoehl, 156 University Ave., Palo Aalto, consult. engrs.

Conn., Waterbury—Bd. P. Wks., City Hall, incinerator. **$600,000.** Malcolm Pirnie, 25 W 43 St., New York, 18, N. Y., engr.

Ga., Columbus—City, voted bonds, sanitary sewer imprvs. **$300,000.** CD 8/25.

Ind., LaGrange—Town Bd. Roy Gage, pres., revised plans Div.-A-17,780 lin. ft. 6- to 18-in. vitr. clay or concrete sewers, standard manholes—Div.-B-sewerage treatment plant, incl.: 11x40 ft. and 16x16 ft. settling tanks; sludge removal equip., drying beds and 25 ft. digester tank; 1 story, bsmnt. 13x25 ft. service bldg., two 200 G.P.M. sewage non-clog pumps, one 20 G.P.M. sump pump, Clyde E. Williams, 312 Colfax Ave., South Bend, engr. CD 1/8/48.

La., Sulphur—City, Wesley Trahan, mayor, **$175,000** bond election Dec. 15, sanitary sewer imprvs.

Mass., Westfield—City, Bd. P. Wks., City Hall, sewerage treatment plant and sys. imprvs. Approx. **$600,000.** Gibbs & Hill, Inc., Penn Station, New York, N. Y., engr.

●**Miss., Gulfport** — City, replacing sanitary sewerage sys., **$2,250,000.** H. D. Shaw & Assoc., Gulfport, and M. T. Singleton, consultant, P. O. Box 1828, Atlanta, Ga., consult. engrs. CD 11/5/45.

O., Bryan—City Council, Bryan, defeated **$350,000** bonds sewer imprvs. CD 10/28.

●**O., Cleveland**—City, City Hall, Lakeside and 6 Sts., voted bonds, sewer and replacement, incl. intercepting. **$2,000,000.** C. J. Wenrick, city engr. CD 10/11.

O., Cleveland—Comrs. Cuyahoga Co., Courthouse, voted bonds, storm and sanitary sewers, appurtenances. **$500,000.** A. S. Porter, Standard Bldg., engr.

O., Lorain—City, City Hall, defeated bonds storm sewers at various sites. **$690,000.** CD 9/26.

O., Rossford—Village, voted **$250,000** bonds Nov. 8, sewerage sys. imprvs. CD 2/20/48.

●**O., Tiffin**—City, plans by Jones, Henry & Schoonmaker, Security Bldg., Toledo, sewage disposal plant, **$861,589;** sewers, **$925,379.**

O., University Heights—City, City Hall, voted bonds, storm and sanitary sewers, various streets. **$350,000.** H. P. Peterson, city engr. CD 9/25/46.

Ore., Milwaukie—City, City Hall, sewage disposal sys. and treatment plant. **$200,000.** Fred Sperr, city engr.

●**Pa., Norristown** — Norristown Boro, Norristown, secondary sewage treatment plant addn., alterations. **$1,800,000.** William A. Goff, Inc., Broad St. Station Bldg., Phila., consult. engr. CD 12/28/45.

S. C., Beaufort—Town, voted bonds, sanitary sewerage sys. **$350,000.** CD 1/8/47.

Tex., Edna—City, 500,000 gal. daily capacity sewer disposal plant. **$200,000.** Glenn H. Engbrock, 7634 Thurow St., Houston, consult. engr.

Tex., Harlingen—City, bond election December 29 storm sewers, **$150,000;** sanitary sewers, **$210,000.** A. Tamm, 216 E. Van Buren St., consult. engr. CD 9/30.

●**Tex., Laredo**—City, voted bonds, sanitary sewer extens., **$600,000;** sanitary sewer laterals **$375,000;** sewage disposal plant **$200,000;** storm sewers, **$80,000.** Frank Drought, 117 W. Pecan St., San Antonio, consult. engr.

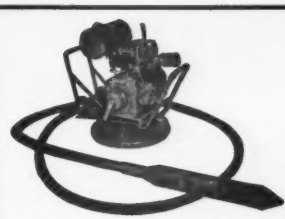
●**Tex., Lubbock** — City, sanitary sewer lines, sys. imprvs, **$1,000,000;** sewage disposal plant, **$665,000;** pumping stations, **$500,000;** storm sewers, **$500,000.** (4 year expans. program). G. K. Harris, c/o owner, city engr.

Tex., Pleasanton—City, voted bonds, sewer collection lines, **$70,000;** sewage disposal plant, **$55,000.** James V. Curnuette, 1623 Transit Tower, San Antonio, consult. engr. CD 10/28.

Tex., Portland—City, sewage collection sys., disposal plant. **$100,000.** M. C. St. John, 3808 Broadway Blvd., Houston, consult. engr.

Tex., Synder—City, sanitary sewer collection sys. extens. **$175,000.**

Wash., Hoquiam—City, City Hall, sewage disposal plant, **$500,000.** F. D. Eastabrook, city engr.



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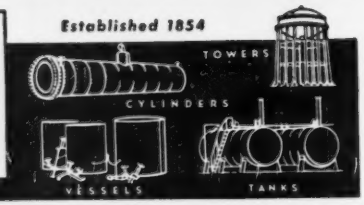

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Wash., Shelton—City, City Hall, sewage disposal plant, **$130,000.** J. W. Carey & H. W. Kramer, 1917 1 Ave., Seattle, consult. engrs. CD 7/20/45.

BRIDGES

La., New Orleans—City, DeLesseps Morrison, mayor, City Hall, 1,751 ft. concrete, steel overpass, N. Claiborne Ave. over Press St. rail yards. **$800,000.**

●**N. Y., New York**—Dpt. P. Wks., Municipal Bldg., Zone 7, lift bridge over East River from Long Island City to Welfare Island. **$4,000,000** (To go ahead in 1950-51). Knappen, Tippetts, Abbett & Co., 62 W. 47 St., Zone 19, consult. engrs.

O., Painesville—Comrs. Lake Co., Courthouse, defeated bonds, bridge program. **$660,000.** CD 10/24.

O., Toledo—John H. Davis, comr. Harbors & Bridges, Toledo, repairing subfloor of Fassett St. bridge, pier repairs and protection to both Fassett and Cherry St. bridges. **$270,000.**

●**O., Youngstown** — City, City Hall, defeated **$1,700,000** bonds, bridge. CD 6/30.

●**Pennsylvania**—State Hy. and Bridge Auth., 18 and Herr Sts., Harrisburg.

Carbon Co.—bridge carrying Route 903 over Lehigh River between Macuh Chunk and East Mauch Chunk. **$550,000.**

Washington, Westmoreland and Fayette Counties—superstructure of Belle Vernon Bridge over Monongahela River, between Belle Vernon and Speers. **$1,870,000.**

●**Pa., Phila. and Upper Darby**—Dpt. P. Wks., City Hall Annex, Phila., and Comrs. Delaware Co. Media, traffic bridge and underpass, 63 and Walnut Sts. **$3,000,000.**

Tex., Laredo—City, Hugh S. Cluck, mayor, Laredo, voted bonds, concrete, steel bridge, **$125,000.** Frank Drought, 117 W. Pecan St., San Antonio, consult. engr.

STREETS AND ROADS

Ga., Columbus—City, voted bonds street paving. **$400,000.** CD 8/25.

●**Md., Baltimore**—City Planning Comn., long range program, incl.:

downtown ring of broad streets on Fallsway, Prat, Pine and Center Sts. Radicals ext. Washington Expressway north to cross Prat St. near Penn St. to vicinity Franklin and Mulberry Sts., and northeast to Center St., then easterly along Freeway to Pulaski Hy.

West Radical near Franklin and Mulberry Sts. to Edmonton Ave., Radical along Druid Hill Ave. and McCulloh St., Jones Falls Expressway at Fallsway and Prat St. to Baltimore St. along Fallsway to Chase St. under Jones Falls Streambed passed Howard St.

Ring streets in concentric circles about city, incl. extending Northern Pkwy. from Falls Rd. to Liberty Heights Ave. and along Herring Run to Pulaski Hy. connecting Coldspring Lane with Hilton Pkwy., and Pulaski Hy. and connecting 25th St. with Monroe-Fulton on west and Broadway radical and Patterson Park on east.

Inner Harbor Crossing north of Fort McHenry to Canton, cutting through Pa. R.R. Yards, bridging tracks and north along Ponca to Pulaski Hy. Approach from west would bring bridge branch of Patapsco River along McComas St. to Fort McHenry.

Plans for off-street parking facilities. Total cost **$195,000,000.**

Minn., Plainview—Village, H. Schwantz, clk., street imprvs., incl. curbs, gutters, asph. surf. and storm sewers, **$300,000.** Hitchcock & Estabrook, 521 Seton Bldg., Minneapolis, consult. engrs.

●**O., Cleveland**—City, City Hall, Lakeside and 6 Sts., widn. E. 26 St. to Garden Park and a bridge to Lake Shoreway. Approved **$3,500,000** bond issue by 62% voters will be submitted to court for approval. CD 10/10.

O., Lorain—City, City Hall, defeated bonds resurf., paving various streets. **$650,000.** CD 9/26.

O., Lyndhurst—Village, Village Hall, 5301 Mayfield Rd., voted bonds, paving various streets. **$100,000.** F. A. Pease Eng. Co., 2063 E. 4 St., Cleveland, village engr.

O., Toledo—Lucas Co., Courthouse, Toledo, and State Hy. Dpt., Columbus, repaving Otter Creek Rd. between Corduroy and Dupont Rds. **$238,720.** Buy E. Neeper, Courthouse, ch. deputy co. engr.

●**Pennsylvania**—State Hy. & Bridge Auth., 18 and Herr Sts., Harrisburg.

Allegheny Co.—construct five sects. Penn-Lincoln Parkway, west, from Bankaville Circle to Steubenville Pike, 9.27 mi. multi-lane divided expressway. **$8,063,600.**

Montgomery Co.—construct 12.13 mi. Schuylkill Expressway from eastern terminal of Pennsylvania Turnpike at King of Prussia, along the Schuylkill River to the Phila. City Line, multi-lane divided hy. **$15,927,965.**

●**Pennsylvania**—State Hy. and Bridge Auth., 18 and Herr Sts., Harrisburg.

Erie Co.—relocation 7.7 mi. State Hy. Route 86, T. R. 20 from Springfield to Girard. **$3,608,110.**

Lawrence Co. — reconstructing 8.193 mi. Traffic Route 422, from New Castle eastward to Butler Co. line, $1,454,035.

Schuylkill Co.—construct 4.05 mi. Pottsville By-Pass, **$2,310,000.**

(Continued on page 100)

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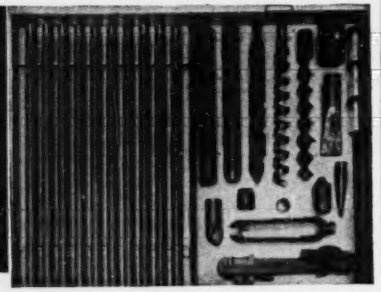

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(Continued from page 98)

S. C., Charleston—City, City Hall, Charleston, and State Hy. Dpt., Columbia, exten. East Bay St. over marshes to connect with Meeting St. at Magnolia crossing. **$500,000.** CD 8/11/44.

Tex., Bonham—Fannin Co., Bonham, voted bonds, Nov. 12, road imprvs., surf. Road Dist. 9, **$62,000**; Road Dist. 17, **$62,000.**

Tex., Laredo—City, Hugh S. Cluck, mayor, voted bonds, street paving, **$175,000.** Frank Drought, 117 W. Pecan St., San Antonio, consult. engr.

Tex., Lubbock—City, street paving, **$300,000**; highway dispersal sys. **$525,000.** (4 year expans. program). G. K. Harris, city engr. CD 4/28.

Tex., Pearsall — Frio Co. Courthouse, bond election Dec. 17, road imprvs. Dist. 1, **$200,000.**

Tex., Snyder—City, street imprvs., paving, **$600,000.**

Ont., Toronto—Municipality, wid'n. Duplex and Jedbury Aves. Exten. **$388,884.**

EARTHWORK, WATERWAYS

●**O., Cleveland**—City, City Hall, Lakeside and 6 Sts., defeated bonds, shore protection plan. **$1,000,000.** CD 10/10.

Que., Victoriaville—Town, R. Beaudet, secy., retaining wall on north side of Richelieu River and incl. collecting sewers. Approx. **$300,000.**

AIRPORTS AND AIRBASES

Idaho, Boise — TERMINAL BLDG. — City, City Hall, plans by Hummel, Hummel & Jones, Wayland and Fennell Sts., remodeling terminal bldg. at airport, **$168,000.** CD 4/20.

Ill., Chicago—TERMINAL—City, City Hall, Zone 2, plans by Paul Gerhardt, Jr., city archt., City Hall, 2 story, 80,000 sq. ft. steel, brick, concrete, stone terminal bldg. wing, at Chicago International Airport. **$900,000.** Ralph H. Burke, 20 N. Wacker Dr., airport engr. CD 11/8/45.

●**O., Cleveland**—AIRPORTS—City, City Hall, Lakeside and 6 Sts., imprv. Municipal and Lakefront Airports. **$5,500,000** bond issue voted by 55% of voters, will be submitted to court for approval. CD 10/11.

Wash., Seattle — RUNWAY, etc. — Port of Seattle, Bell St. Terminal, Zone 1, 1,400 ft. paved main runway addn., and grading, compacting 500 ft. overrun, at Seattle-Tacoma Airport, **$460,000.** G. T. Treadwell, ch. engr.

N. B., Chatham—DWELLINGS—Government of Canada, Dpt. National Defense, Ottawa, Ont., 100 addnl. dwellings for Air Force personnel at jet plane base of R.C.A.F. **$700,000.**

LATIN AMERICA

Mexico, Casunahua—Mexican Govt., Srta. de Recursos Hidraulicos (Hydraulic Resources Ministry) Balderas, 94, Mexico, D. F., plans irrigation canal. **$1,500,000.**

Mexico, El Fuerte—Mexican Govt., Srta. de Recurses Hidraulicos (Hydraulic Resources Ministry), Balderas, 94, Mexico, D. F., plans irrigation dam. **$1,500,000.** CD 5/20/46.

Mexico, Matamoros—Industrias La Victoria, S.A., Matamoros, plans reconstructing oil mill. **$400,000.**

Mexico, Mexico City—Congelacion de Alimentos, S.A., Monterrey, 70, Mexico, D. F., plans meat packing house and meat byproducts factory. **$500,000.**

Mexico, Mexico City—Corporacion Nacional Distribuidora, S. A., Fresno y Crisantema, Mexico, D. F., Mexico, plans electric refrigerator factory. **$400,000.**

Mexico, Tulancingo — Municipal Govt., Palacio Municipal, Hidalgo, plans WW, sewerage and paving. **$700,000.**

Mexico, Vera Cruz—Laureano Carus Pando & Assoc., Direccion Conocido, Vera Cruz, Ver., Mexico, plans foundry. **$1,730,000.**

PUBLIC BUILDINGS

Ala., Huntsville — HOUSING — Huntsville Housing Auth., Huntsville, 350 housing units. Approx. **$250,000.**

Ala., Phenix City—HOUSING—Phenix City Housing Auth., Phenix City, 250 housing units. Approx. **$250,000.**

Calif., Glendale — CITY HALL — City, defeated **$950,000** bonds, 4 story city hall annex, Albert E. Hansen, 257 S. Spring St., Los Angeles, archts. CD 8/29.

●**Calif., La Mesa**—HIGH SCHOOL, etc.—Grossmont Union High School Dist. and La Mesa and Lemon Grove Elementary School Dist., voted **$1,409,000** bonds high school, **$257,000,** bonds, elementary schools. CD 2/15/46.

Calif., Salinas—SCHOOLS—Salinas School Dist., Salinas voted $2,200,000 bonds, Washington Jr. High School addn., **$700,000**; 1 story, frame, stucco El Sausal Junior High School, **$750,000.** Charles E. Buttner, 7 Winham St., Salinas, archt. CD 5/24.

●**Calif., San Diego** — LIBRARY, etc. — City voted **$2,500,000** bonds, main library and branch libraries at Linda Vista, Pacific Beach, El Cerrito, Loma Portal, North Park, Mission Hills. CD 9/30.

(Continued on page 103)

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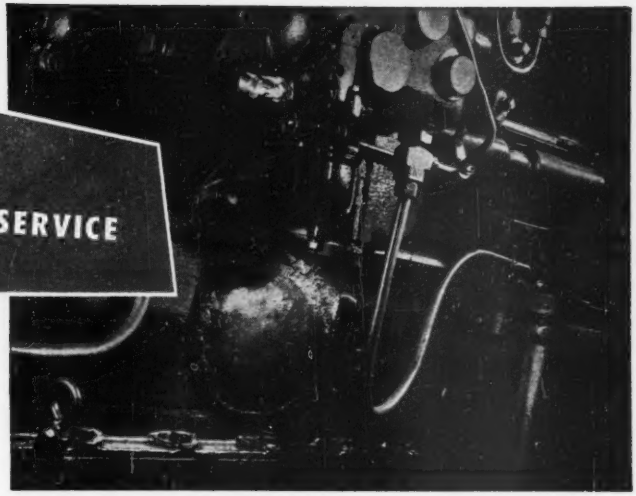

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Here are three typical case reports on repairs made with Ni-Rod:

"1. Block broke in crank chamber after 9381 hours of service. A patch was welded in with Ni-Rod. Since the repair, the block has operated 2064 hours and is still in good condition. Cost of welding was $12.75.

"2. Crank shaft failed after 1746 hours. The broken end engaged the main bearing shells, turning them in the block, heavily scoring the saddle. Repairs were made by machining the bearing area to .100-inch oversize, building up with Ni-Rod, and finally machining to correct size. This prolonged the engine life by 4087 hours. Cost of the entire repair was $40.60.

"3. Crank shaft failed after 4540 hours, causing damage similar to that described in Case 2, above, and was repaired the same way. The engine is still in operation 1369 hours after the repair. The cost of repair was $42.50."

The three blocks described have a total replacement value of $1,932.27. Subtracting the repair costs, there is a net saving of $1,836.42, and a gain of more than 7520 hours of operating service.

If you are not yet familiar with Ni-Rod's outstanding advantages, why not order a package today? Your nearest INCO distributor stocks Ni-Rod in 3/32", 1/8", 5/32", and 3/16" diameters.

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- Works on both AC and DC

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- Thorough fusion
- Freedom from cracks and porosity

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SOUTH MILWAUKEE, WISCONSIN

27D49

(Continued from page 100)

Calif., Tulare — SCHOOL — Sundale Union Elementary School Dist., c/o County Supt. Schools, Visalia, plans by Robert C. Kaestner, 117N. Church St., Visalia, 14-classroom, frame, stucco Sundale School, **$250,000.**

Conn., Norwich—JUNIOR HIGH SCHOOL—City, Thomas W. Mahan, supt Schools, City Hall, brick, steel, concrete Junior High School, **$750,000.**

Conn., Norwalk—SCHOOL—City, Bd. Educ., City Hall, plans by Gilroy & Easton, 64 Wall St., 2 story, bsmnt., brick, steel school, **$250,000.**

Conn., Waterbury—GARAGE—Bd. P. Wks., City Hall, garage, **$110,000.** Malcolm Pirnie, 25 W. 42 St., New York, 18, N. Y., engr.

Del., Dover—DORMITORY—Delaware State College, Dover, sketches by Massena & Du Pont, 704 Delaware Ave., Wilmington, women's dormitory **$250,000;** gymnasium, **$250,000,** Louis E. Doane, Penn. R. R. Bldg., Wilmington, consult. engrs. CD 3/11/46.

● **Fla., Miami** — HOUSING — Miami Housing Auth., 327 N. W. 62 St., 1,500 housing units, **$7,500,000.**

● **Fla., Tampa**—HOUSING—Tampa Housing Auth., Tampa, 1500 housing units, **$5,000,000.**

Ga., Albany — HOUSING — Albany Housing Auth., Albany, 250 housing units, Approx. **$250,000.**

Ga., Augusta—HOUSING—Augusta Housing Auth., Augusta, 750 housing units, Approx. **$250,000.**

Ga., Cartersville — HOUSING — Cartersville Housing Auth., W. N. Shadden, chn., Cartersville, 150 housing units, Approx. **$250,000.**

Ga., Cedartown—COURTHOUSE, etc.—Polk Co., bond election Dec. 14, courthouse and jail, **$500,000.**

Ga., Columbus—AUDITORIUM—City, voted bonds auditorium, **$750,000.** CD 8/25.

Ga., Columbus—HOUSING—Columbus Housing Auth., 1000 Wynnton Rd., 800 housing units, Approx. **$250,000.**

Ga., Decatur—HOUSING—Decatur Housing Auth., Decatur, 100 housing units, Approx. **$250,000.**

Ga., Gainesville — HOUSING — Gainesville Housing Auth., Gainesville, 200 housing units, Approx. **$250,000.**

Ga., Griffin — HOUSING — Griffin Housing Auth., Griffin, 200 housing units, Approx. **$250,000.**

Ga., Marietta—HOUSING—Marietta Housing Auth., Marietta, plans by Bothwell & Nash, 206 Roswell St., 125 housing units, **$875,000.**

Ga., Moultrie—HOUSING—Moultrie Housing Auth., Moultrie, 125 housing units, Approx. **$250,000.**

Ill., Blue Island—SCHOOL—School Dist. 130, 13043 S. Maple St., plans by Madden & O'Connor, 165 E. 154 St., Harvey, 1 story, brick, stone, steel, concrete school, **$250,000.**

Ill., Monsanto (East St. Louis P. O.)—VILLAGE HALL — Village Bd. Trustees, Leo Sauget, pres., 2902 Monsanto Ave., voted **$300,000** bonds 2 story, bsmnt. village hall, Lower Cahokia Rd. and Midwest Ave. J. W. Goldenberg & Assoc., Metropolitan Bldg., East St. Louis, archts. CD 11/7.

● **Ill., Springfield**—SCHOOLS—Bd. Educ., 200 E. Adams St., defeated **$5,940,000** bonds, school imprvs. and new constr. CD 10/20.

Ind., Bedford—SCHOOL—Bd. School Trustees, Bedford, plans by McGuire & Shook, 1400-01 Fletcher Trust Bldg., Indianapolis, 1 and 2 story, 134x241 ft., brick, stone, rein.-con., structural steel school, **$450,000.** Bevington, Taggert & Fowler, 730 Ind. Pythian Bldg., engrs. CD 1/22/48.

● **Kan., Lawrence**—STUDENT UNION—University of Kansas, plans by Mann & Co., Hutchinson, student union bldg. addn. **$1,000,000.**

Kan., Republic — SCHOOLS — Bd. Educ., plans by Glover & Newcomb, 3101 Huntoon St., Topeka, grade and high school, **$250,000.**

Kan., Topeka — SCHOOL — Bd. Educ., 415 W. 5 St., grade and Junior High School, **$300,000.**

● **Kan., Wichita**—SCHOOLS—Bd. Educ., Admin. Bldg., 428 S. Broadway, Zone 2, **$3,113,000** bonds voted Nov. 8, 4 elementary schools, 2 intermediate schools, 1 elementary school replacement, and 8 school addns.

Ky., Lexington — HOUSING — Lexington Housing Auth., c/o Gillig, Watkins & Wilson, 180 Walnut St., archts., 600 housing units, Approx. **$250,000.**

Mass., Waltham — HOSPITAL — Commonwealth of Mass., Dpt. Mental Health, 100 Nashua St., Boston, plans by Gordon Robb, 551 Boylston St., Boston, M-201 Bldg. for psychotic children, Metropolitan State Hospital, **$925,000.**

Mich., Birmingham—SCHOOL—Bd. Educ., Chester St., plans by Swanson & Assoc., W. Long Lake Rd., 2 story, masonry, concrete, structural steel high school addn., **$400,000.**

Mich., Brighton — SCHOOL — Bd. Educ., Brighton, plans by Walter Anicka, 617 S. Forrest Ave., Ann Arbor, masonry, concrete, brick, block, structural steel school, **$250,000.**

● **Mich., Lansing**—STATE—Mich. State Capitol Bldg. Comn., Lansing, plans by Smith, Hinchman & Grylls, 800 Marquette Bldg., Detroit, 8 story, rein. con., masonry, steel, state office headquarters, **$4,000,000.** CD 4/12/44.

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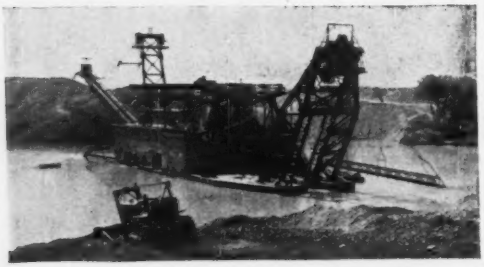
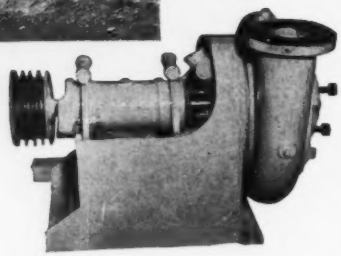


Yuba No. 20 placer dredging at Hammonton, Cal., is equipped with Model "S" pumps.



Model "S" YUBA sand pump built for pumping sand in jig or sizing installations.

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This same customer has since purchased another 8", Model "S," and he has in use several 3" and 6" pumps of the same type.

Yuba Model "S" pump is a centrifugal type, designed especially for dredging mud, sand, or muddy water encountered in placer dredging or excavating work. Special alloys are used in castings to ensure long life with minimum loss of time for repairs. Our aim in building pumps, as with all dredge parts, is to keep your dredge running — you profit only when it is operating.

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Mich., Troy—SCHOOL—Troy Twp., School Dist., Bd. Educ., Stuart K. Baker, Troy, plans by Bennett & Straight, 15624 Michigan Ave., Dearborn, Junior and Senior High School, **$800,000.**

Mich., Ypsilanti — PLANT — Dpt. Admin. Bldg. Div., A. N. Langius, dir., 115A, State Office Bldg., Lansing, concrete, brick, structural steel power plant and connecting services, sewerage, for State Normal College, **$500,000.** E. R. Little Co., 1507 Kales Bldg., Detroit, consult. engr. CD 6/16.

Minn., Stillwater—GYMNASIUM—Bd. Educ., H. A. Swanson, clk., **$120,000** bond election Dec. 6, school gymnasium adn. **$250,000.** E. D. Corwin, E. 818 First National Bank Bldg., St. Paul, archt.

Miss., Picayune—HOSPITAL—City, Claiborne McDonald, Sr., mayor, hospital, **$300,000.**

N. J., Pitman—SCHOOL—Bd. Educ., Pitman, plans by H. M. Klaiss, 7 N. Maple Ave. Woodbury, school addn., **$250,000.**

N. J., Wildwood — WELFARE HOME — Chosen Freeholders, Cape May Co., Cape May Court House, plans by Edwards & Green, Broadway and Carman St., Camden, welfare home, **$250,000.**

N. J., Wildwood—SCHOOL—Wildwood Bd. Educ., Wildwood, school, Approx. **$250,000.**

N. M., Las Vegas—HOSPITAL—City, City Hall, Las Vegas, plans by Max Flatow & Assoc., engrs. and archts., Albuquerque, 40 bed community hospital, **$325,000.**

●**N. Y., Elmhurst**—HOSPITAL—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, plans by York & Sawyer, 101 Park Ave., New York, Zone 17, 13 story hospital, on area bounded by Broadway, 78 St., 41 and Baxter Aves. **$13,000,000.** CD 3/5/47.

●†**N. Y., New York**—HOSPITAL—U. S. Eng., 80 Lafayette St., Zone 13, plans by Alfred Hopkins Assoc., 415 Lexington Ave., Zone 17, 1,200 bed hospital for Veterans Admin. on site bounded by First Ave., 23 St., Avenue A and 25 St. for Veterans Admin., Vermont Ave. between H and I Sts. N. W., Wash. 25, D. C., **$15,000,000.** Archt-engr. contract with Eggers & Higgins, 25 Broad St. New York, and Charles B. Meyers, 31 Union Sq., has been cancelled by mutual agreement. CD 4/1/47.

N. C., Elizabethtown—HOSPITAL—Bladen Co., H. L. White, chn. Bd., Bladenboro, voted bonds, 50 bed hospital. Approx. **$500,000.**

N. C., Henderson—COURTHOUSE, etc.—Vance Co., F. H. Ellington, chn. Bd. Comrs., Henderson, plans by John J. Rowland, Kinston, enlarging courthouse, **$250,000;** and new jail, **$100,000.**

O., Akron — COURTHOUSE, etc. — Comrs. Summit Co., Courthouse, one mill levy defeated, courthouse and jail imprvs. Approx. **$500,000.** CD 10/5.

●**O., Ashtabula**—SCHOOL—Bd. Educ., Ashtabula, voted **$2,500,000** bonds, school imprvt. program.

O., Avon Lake—SCHOOLS—Avon Lake Village School Dist., 32770 Lake Rd., voted bonds 2 schools. **$750,000.** Fulton, Krinsky & Delamotte, 601 Euclid Ave., Cleveland, archts. CD 10/5.

O., Barberton — HOSPITAL — City, voted **$900,000** bonds voted, hospital. CD 8/9.

O., Bay Village — HIGH SCHOOL — Bd. Educ., 502 Cahoon Rd., voted **$610,000** bonds high school, Cahoon and Wolf Rds. Fulton, Krinsky & Delamotti, 6014 Euclid Ave., Cleveland, archts. CD 11/21.

O., Bryan—SCHOOL—Bd. Educ., Bryan, voted **$950,000** bonds, schools. CD 9/13.

●**O., Cambridge**—SCHOOLS—Cambridge City School Dist., Guernsey Co., Cambridge, voted **$1,276,000** bonds, new bldgs., imprvs. CD 10/5.

O., Celina—SCHOOL—Bd. Educ., Celina, voted **$975,000** bonds, school constr.

O., Chardon—HOSPITAL—Comrs. Geauga Co. Courthouse, defeated **$750,000** bonds, hospital. CD 7/28.

●**O., Cleveland**—SCHOOLS—Bd. Educ., 1380 E. 6 St., plans by Arthur S. Baer, Administration Bldg., Boys Trade School, possible site is W. 49 St. and Detroit Ave. **$1,500,000;** Junior High School replacing Brawnell and Central Junior High Schools to be called George Washington Carver Junior High School, **$1,000,000;** Jane Addams Vocational School addn., **$500,000.** CD 3/1/43.

●**O., Cleveland**—STORAGE—City, City Hall, Lakeside and 6 Sts., defeated bonds, maintenance and storage bldg. **$1,000,000.** CD 10/11.

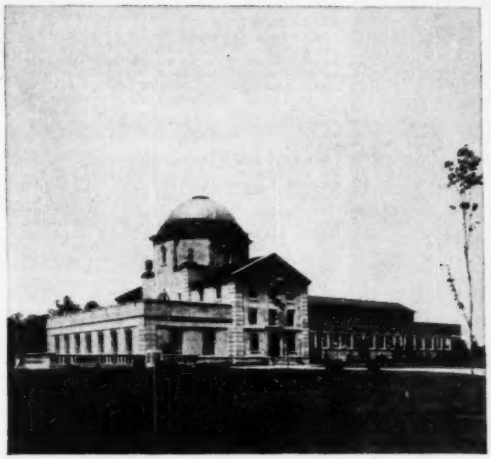
●**O., Cleveland**—FIRE STATIONS, etc.—City, City Hall, Lakeside and 6 Sts., defeated bonds, 7 fire stations, incl. fireman school, police stations, etc., **$2,000,000.** CD 10/11.

●**O., Cleveland**—COURTHOUSE, etc.—Comrs. Cuyahoga Co., County Courthouse, defeated bonds, courthouse, criminal court house, juvenile court and detention home addn., remodeling. **$1,360,000.** CD 10/27.

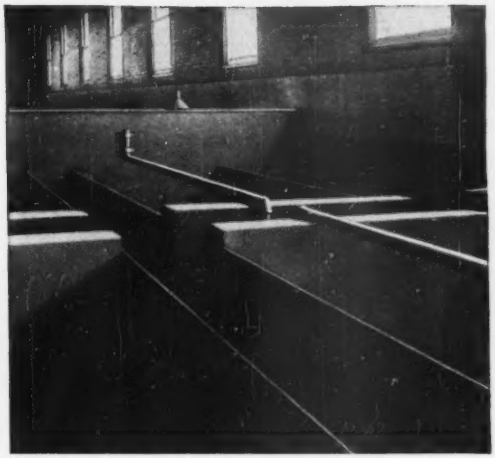
●**O., Cleveland** — HOSPITAL BUILDINGS — University Hospitals, 2065 Adelbert Rd., psychiatry bldg., **$1,000,000,** clinical and laboratory cancer research facilities, **$300,000.**

●**O., Cleveland Heights** — SCHOOLS — Bd. Educ., 1749 Lee Rd., voted bonds, elementary school and Junior High School; 2 elementary schools and one Junior High School addns. **$2,750,000.** CD 6/22.

(Continued on page 106)



West Pumping Station and Filtration Plant, Bureau of Water, Erie, Pa.



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Saved—Repair Costs and Nine Weeks' "Down" Time—Superintendent states that with ordinary methods of protection there would have been three periods of suspended service for the tank, each of them lasting for at least three weeks. "Now, however," he points out, "with no indications of a breakdown of the zinc coating, which has been in continuous operation for six years, we feel assured that the metallized surfaces will give many more years of perfect protection."

Other Jobs—This same user reports that metallizing has stopped corrosion on a number of other jobs done since the tank described above. These include steel filter troughs—some of which had already become so badly corroded that small holes had penetrated through the metal. These holes were filled with the sprayed metal at the time the coating was applied, thereby restoring to use troughs which otherwise would be considered worn out. They've also used metallizing to stop corrosion in boiler plant feed-water treating tanks, on steel ladders in basins and reservoirs, brace rods, sluice gates and, as user states, "all metal surfaces subject to rapid oxidation."

Further Information Available—Metallizing may help solve your corrosion problems. For further information, or the name of your nearest metallizing contractor, write:

FREE BULLETIN. Bulletin 62—"Stop Corrosion with Metallizing" pictures many different types of jobs, such as bridges, structural steel, barges, dam gates; includes spray test and life expectancy charts.

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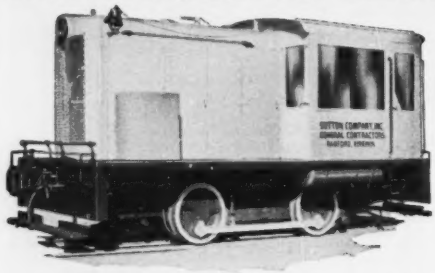

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(Continued from page 104)

O., Cleveland Heights—SCHOOL—Bd. Educ., 1749 Lee Rd., 2 story, bamnt., brick, block, steel Belvoir School addn., Silby and Belvoir Rds. **$325,00.** CD 11/21.

O., Columbus—HIGH SCHOOL, etc.—Madison Twp. School Dist., Franklin Co., Columbus, voted **$550,000** bonds, high school gymnasium-auditorium and vocational dept.

O., Conneaut—SCHOOLS—Bd. Educ., Conneaut, voted **$329,000** bonds, schools, CD 3/12/47.

O., Coshocton—SCHOOL—Bd. Educ., Coshocton, voted **$978,000** bonds, school program. CD 6/16.

O., Cuayahoga Heights — SCHOOL — Bd. Educ., 4820 E. 71 St., voted bonds, school **$350,000.** George & Henry Fox, 1825 Union Commerce Bldg., Cleveland, archts. CD 8/8.

O., Dayton—SCHOOL—Madison Twp., Montgomery Co., Dayton, voted **$250,000** bonds, school. CD 10/23/45.

O., Dayton—SCHOOL—Van Buren Twp., Local School Dist., Dayton, voted **$850,000** bonds, schools. CD 10/17.

O., Delphos—SCHOOL—Bd. Educ., Delphos, voted **$350,000** bonds school. C. H. Shively, Fremont, archt. CD 9/13.

O., Dover—SCHOOLS—Bd. Educ., Dover, voted **$860,000** bonds, 2 grade schools. CD 9/23.

●**O., Elyria**—SCHOOLS—Elyria Bd. Educ., Middle Ave., voted bonds, remodel and addns. to 8 schools and 2 new Junior High Schools. **$3,700,000.** Outcalt & Guenther & Assoc., 13124 Shaker Sq., Shaker Heights, archts. CD 10/5.

O., Fairview Park—SCHOOLS—Bd. Educ., E. 213 St. and Campus Ave., voted bonds, 2 school addns., remodeling. **$460,000.** Fulton, Krinsky & Delamotte, 6014 Euclid Ave., Cleveland, archts. CD 10/28.

O., Findlay—SCHOOL—Bd. Educ., Findlay, voted **$350,000** bonds, school.

O., Findlay — SCHOOL — Mt. Cory-Rawson School Dist., Hancock Co., Findlay, voted **$514,000** bonds, school.

O., Hillsboro—SCHOOL—Bd. Educ., Hillsboro, defeated **$545,000** bonds, schools. CD 7/28.

O., Huron—SCHOOL—Bd. Educ., Huron, voted **$430,000** bonds, school.

O., Mansfield—COURTHOUSE—Comrs. Richland Co., Courthouse, Manfield, defeated **$300,000** bonds, courthouse addn. CD 9/13.

O., Maple Heights—HIGH SCHOOL, etc.—Bd. Educ., Lee and Broadway, voted bonds, high school addn., Clement Dr., **$400,000.** Outcalt & Guenther, 13124 Shaker Square, Cleveland, archts.; Stafford School addn., Stafford Rd. near Mayfield Rd., **$250,000.** W. G. Caldwell, Engineers Bldg., Cleveland, archt.

●**O., Marietta**—SCHOOLS—Bd. Educ., Marietta, voted **$1,350,000** bonds, school imprvs. CD 9/20.

●**O., Massillon**—SCHOOL—Bd. Educ., Massillon, defeated **$3,600,000** bonds, school bldgs. CD 12/8/47.

●**O., Mayfield Heights**—SCHOOLS—Bd. Educ., Sam Rd., voted bonds, 4 high schools and elementary schools addns., alterations. **$1,000,000.** Fulton Krinsky & Delamotte, 6014 Euclid Ave., Cleveland, archts. CD 9/23.

O., Miamisburg—SCHOOLS—Bd. Educ., Miamisburg, voted **$490,000** bonds, schools.

●**O., Middletown**—SCHOOLS—Bd. Educ., 1st American Bank Bldg., voted **$2,500,000** bonds, schools. CD 10/11/48.

O., Mount Vernon—SCHOOL—Bd. Educ., Mt. Vernon, voted **$990,000** bonds, school. CD 5/19.

O., Napoleon — HOSPITAL — Bd. Comrs. Geauga Co., Courthouse, defeated bonds, hospital, **$750,000.** CD 8/12.

O., North Royalton—HIGH SCHOOL—Bd. Educ., Royalton Rd., voted bonds, high school. **$425,000.** CD 10/28.

O., Ottawa Hills — SCHOOL — Bd. Educ., Ottawa Hills, voted **$265,000** bonds school. CD 10/11.

O., Painesville—SCHOOLS—Bd. Educ., 167 Washington St., plans by Fulton, Krinsky & Delamotte, 6014 Euclid Ave., Cleveland, addns. to Lathrop, St. Clair, State Street and Huntington Schools. **$700,000.**

●**O., Painesville** — SCHOOLS — Bd. Educ., Painesville, voted bonds, Harvey High School addn., **$850,000;** converting Riverside Junior High School to a High School, **$790,000.** CD 9/23.

●**O., Parma**—SCHOOLS—Bd. Educ., 5401 W. 54 St., Cleveland, voted bonds, high school, W. 54 St. and Linwood Ave.; elementary school at Commonwealth and Blossom Rds. **$3,250,000.** Fulton, Krinsky & Delamotte, 6014 Euclid Ave., Cleveland, archts. CD 10/10.

O., Perrysburg — SCHOOL — Bd. Educ. Perrysburg, voted **$500,000** bonds, school. CD 5/17/45.

O., Rocky River — HIGH SCHOOL — Bd. Educ., 20310 Detroit Rd., voted bonds, high school addn., Detroit and Wagar Rd. **$750,000.** Fulton, Krinsky & Delamotte, 6014 Euclid Ave., Cleveland, archts. CD 10/17.

O., St. Marys—SCHOOL—Bd. Educ., St. Marys, voted **$526,000** bonds, school.

O., Sandusky—SCHOOLS—Bd. Educ., Courthouse, plans by Harold Parker, 230 E. Market St., 1 story bamnt., grade school, Ontario St. between Third and Fifth Sts. **$800,000.** Paul

B. Fleming, 1960 Euclid Ave., Cleveland, mechanical engr. CD 11/28/45.

O., Shelby—SCHOOL—Bd. Educ., Shelby, voted **$735,000**, school.

O., Sidney—SCHOOLS—Bd. Educ., Sidney School Dist., Sidney, voted **$972,328** bonds 3 schools. CD 9/13.

O., Spencerville — SCHOOL — Bd. Educ., Spencerville, voted **$320,000** bonds, school. CD 10/11.

O., Stow—SCHOOL—Bd. Educ., Stow Local Dist., Stow, voted **$450,000** bonds, school. CD 10/20.

O., Strongsville—HIGH SCHOOL—Bd. Educ., Pearl Rd., voted bonds, high school addn., Pearl Rd. **$325,000.** Mellonbrook, Foley & Scott, 26 Front St., Berea, archts. CD 11/3.

●**O., Toledo**—SCHOOLS—Bd. Educ., R. S. Wenzlau, bus. mgr., Linwood and Southard Sts., $5,950,000 levy approved, 2 schools, one in Heather Downs Sect, and other in West Central-Monroe St. area, **$450,000** each; enlarging gymnasium at Libbey High School **$375,000**; enlarge gymnasium, music and cafeterias at Waite and Scott High Schools **$500,000** each; remodel and addn. 8 rooms to Beverly grade school **$300,000**; 8 rooms at DeVeaux, **$275,000**; 8 rooms at Longfellow, **$275,000.** CD 10/27.

●**O., Toledo** — JUVENILE COURT — Comrs. Lucas Co. Courthouse, **$1,450,000** one mill levy voted, child study institute and juvenile court bldg. CD 8/24.

●**O., Van Wert**—SCHOOLS—Bd. Educ., Van Wert, defeated **$1,200,000** bonds Nov. 8, 2 grade schools.

O., Willard—SCHOOL—Bd. Educ., Willard, voted **$420,000** bonds school. C. H. Shively, Fremont, archt. CD 9/23.

O., Zenia—SCHOOL—Bd. Educ., Bath Twp., Greene Co., voted **$890,000** bonds school. CD 10/20.

Okla., Cherokee—DIESEL ENGINE—City, voted bonds, 1,100 hp. diesel engine at light plant. **$135,000.** C. H. Guernsey, 1410 N. Robinson St., Oklahoma City, consult. engr. CD 11/4/45.

Ore., Springfield—HIGH SCHOOL—School Dist. 19, Springfield, $950,000 bond election Dec. 19. Junior High School. **$650,000.**

Pa., Ambler—HOUSING—Montgomery Co. Housing Auth., Box 189, Pottstown, housing. **$500,000.**

Pa., Elrama—SCHOOL—Bd. Educ., Union Twp., Courtney, plans by Beall & Parkins, 601 Union Trust Bldg., Washington, 1 story, banks., brick on hollow tile school. **$250,000.**

Pa., Llanerch Hills (Upper Darby P. O.)—SCHOOL—Upper Darby Twp. School Dist., Upper Darby, plans by W. Pope Barney & Roy W. Bonwell, 1411 Wanut St., Phila., school. **$764,500.**

Pa., Phila.—KITCHEN and CAFETERIA—General State Auth., 18 and Herr Sts., Harrisburg, kitchen and cafeteria at Phila. State (Byberry) Hospital. **$700,000.** CD 1/4/45.

S. C., Columbia — HOUSING — Columbia Housing Auth., Dr. E. C. Coker, chm., Columbia, 700 housing units. Approx. **$250,000.**

S. D., Huron—AUDITORIUM—City, plans by Harold Spitznagel, 816 Natl. Bank of South Dakota Bldg., Sioux Falls, civil auditorium. **$350,000.**

Tenn., Columbia—HOSPITAL—Maury Co., Columbia, voted **$750,000** bonds. 85-bed hospal.

Tenn., Johnson City—HOUSING—Johnson City Housing Auth., Johnson City, 500 housing units. Approx. **$250,000.**

Tex., Arlington—ENGINEERING—Arlington State College, Arlington, plans by Tatum & Quade, 2812 Fairmount St., Dallas, engineering bldg. **$300,000.** Carlton W. Adams, A & M System archt., 228 Admin. Bldg., College Station, superv. archt. CD 9/30.

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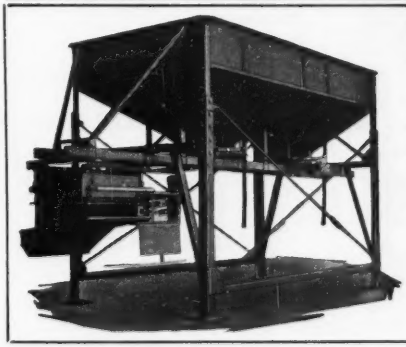

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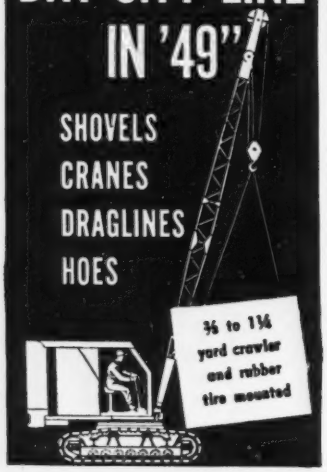

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Tex., Bonham—SCHOOL—Bonham Independent School Dist., Bonham, voted bonds, school. $460,000.

•Tex., Brownsville — BORDER STATION — Pub. Bldgs. Admin., 18 and F Sts. N. W., Wash. 25, D. C., border station at Brownsville International Bridge at Old Fort Brown, $650,000. CD 11/23/45.

Tex., Corpus Christi — LIBRARY — Corpus Christi Independent School Dist., Corpus Christi, plans by Otis P. Johnson, 141 Naples St., masonry library for Del Mar College. $300,000.

Tex., Del Rio—HOUSING—Del Rio Housing Auth., Del Rio, plans by Phelps & De Wees & Simmons, 1501 Majestic Bldg., San Antonio, 128 housing units. $928,000. CD 9/10/47.

Tex., Edna—COURTHOUSE, etc.—Jackson Co., Edna, courthouse and jail. $550,000. Wyatt C. Hedrick, 5201 Fannin St., Houston, engr. and archt. CD 11/17.

•Tex., Galveston—COURTHOUSE, etc.—Galveston Co., Courthouse, bond election Dec. 17, courthouse and jail. $2,200,000. H. Voelcker & Assoc., 2801 San Jacinto St., Houston, and R. R. Rapp, Guaranty Bldg., archts. C. C. Washington, co. engr. CD 11/16.

Tex., Harlingen — CITY HALL, etc. — City, bond election Dec. 28, combination city hall-fire station. $290,000. Alfred Tamm, 216 E. Van Buren St., consult. engr. CD 9/30.

Tex., Haskell—SCHOOL, etc.—Haskell Independent School Dist. Haskell, plans by Don W. Smith, Texas Bank Bldg., Sweetwater, brick, hollow tile school and gymnasium, concrete frame and fdn. $250,000.

Tex., Nacogdoches—HOSPITAL—City, plans by Hal B. Tucker, Nacogdoches, hospital. $400,000. CD 9/19, under LB.

Tex., Pleasant Grove (Dallas P. O.) — SCHOOL—Pleasant Grove Independent School Dist., Pleasant Grove, plans by Mark Lemmon, 1210½ Main St., Dallas, school. $250,000. CD 9/23.

Tex., Prairie View College—ANIMAL AND PLANT INDUSTRIES—A & M College, c/o Bd. Directors, College Station, plans by Norton & Mayfield, Box 1169, Bryan, animal and plant industries bldg. for Prairie View College, Prairie View College. $300,000. CD 9/30.

Tex., Wortham—HOUSING—Wortham Public Housing Auth., M. C. Strange, chn., Wortham, 80 low rent housing units. $592,000.

Va., Portsmouth — HOUSING — Portsmouth Housing Auth., Portsmouth, 400 housing units. Approx. $250,000.

W. Va., Parkersburg—SCHOOL—Bd. Educ. Wood Co., Parkersburg, plans by Ross & Sansbury, 404 Julian St., 2 story, bsmnt., Emerson School. $285,000., plans by Frampton & Bowers, 414 11 St., Huntington, brick, stone Junior High School. $320,000.

Wisconsin—RURAL DISTRIBUTION LINES —Waushara County Electric Co-operative, Inc., Wautoma, 21 mi. rural distr. lines and sys. improv., Waushara Co., $129,000.

B. C., Dawson Creek — SCHOOL — Trustees School Dist. 59, Dawson Creek, plans by Gardiner & Thornton, 1664 W. Broadway, Vancouver, 20 room school. Approx. $350,000.

B. C., Fort St. John—SCHOOL—North Peace River School Dist. 60, plans by Gardiner & Thornton, 1664 W. Broadway, Vancouver, frame Junior-Senior High School. Approx. $400,000.

N. S., Sydney—HIGH SCHOOL—Municipality, high school, $310,000.

Ont., Toronto — WELFARE CENTER — Municipality, health and welfare center for East-Central Dist. $250,000.

Que., Quebec City — SCHOOLS, etc. — School Comn., E. Huot, secy., plans by L. Turcotte 47 Couronne St., 2 story, bsmnt., 40x242 ft., rein.-con., brick 31-classroom and 28-room residence for boys and girls. Approx. $460,000.

Que., Ste. Anne De Bellevue — SCHOOL — Macdonald Protestant Central School Bd., Col. R. F. Angus, chn., plans by A. L. Perry, 1434 St. Catherine St. W., Montreal, high school, Approx. $500,000.

COMMERCIAL BUILDINGS

Ala., Birmingham—APARTMENT UNITS—George E. Bradford, Robert C. Garrison, & Amzi Barber, Frank Nelson Bldg., 98 apartment units. $700,000.

Calif., El Cerrito—RESIDENCES—James M. Walker, 1631 University Ave., Berkeley, plans by Paul Hammerberg, 2 Norwood Ave., Berkeley, 59 residences, Fairmont Ave., $500,000.

•Calif., San Mateo—HOTEL—California Jockey Club, Inc., Bay Meadows race track, plans by Maury I. Diggs, 2150 Lakeshore St., Oakland, 262-unit hotel. $1,000,000.

Colo., Durango—HOSPITAL—Sisters of Mercy, Durango, plans by Walter de Mordaunt, 738 Thatcher Bldg., Pueblo, 2 story, bsmnt., 48 bed Mercy hospital addn. $500,000.

Ga., Columbus—CHURCH—St. Paul Methodist Church, c/o James J. W. Biggers, archt., Flower Bldg., Columbus, church. $300,000. CD 12/9/48.

•Kan., Winfield—HOSPITAL—Sisters of St. Joseph, Winfield, plans by Maguolo & Quick, 4908 Delmar St., St. Louis, Mo., St. Mary's Hospital addn. $1,000,000. CD 11/17.

•Ky., Louisville—COLLEGE—Bellarmine College, 1212 Oleanda Ave., plans by Thos. J.

(Continued on page 110)

COMING....

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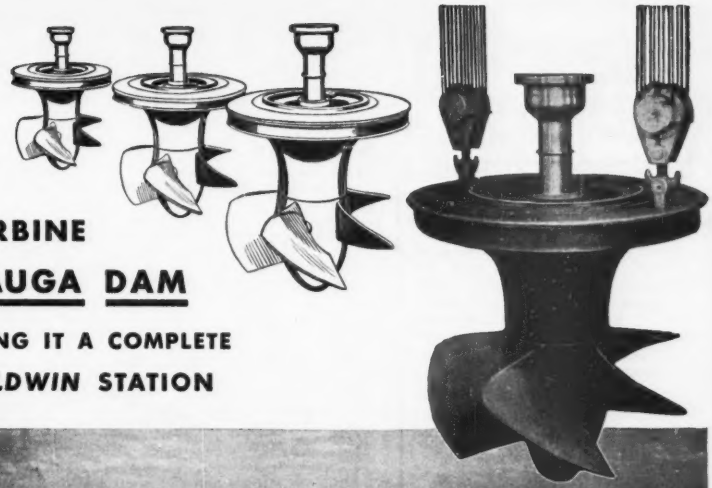

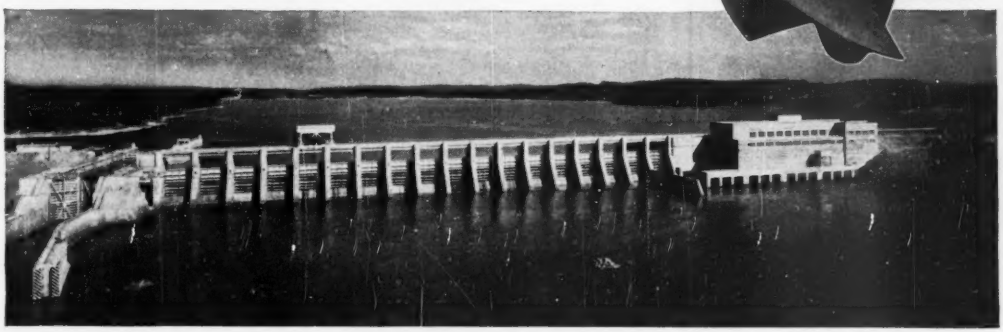

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(Continued from page 108)

Nolan & Sons, Ky. Home Life Bldg., Louisville, Catholic Men's College, **$2,500,000,** 1st bldg to be $400,000 science bldg.

Md., Essex—RESIDENCES—Wm. B. Watkins, 1110 Fidelity Bldg., Baltimore, plans by Cyril H. Hebrank, 20 E. Lexington St., Baltimore, one hundred-fifty 2 story, bsmnt., 16x29 ft., brick residences, Wiltshire and Berkshire Rds., **$750,000.**

●**Mich., Dearborn** — HOSPITAL — Oakwood General Hospital Assn., Dearborn, plans by Henry F. Stanton, Free Press Bldg., Detroit, 5 story, rein.-con. structural steel, masonry, glazed tile, hospital. **$3,000,000.**

Mich., Detroit—STORES—Owner, c/o Chas. N. Agree, archt., 1140 Book Tower, concrete, brick, block, macatta, rein.-con. structural steel, drug store, super market, etc. **$250,000.**

●**Mich., Detroit**—HOTEL—Pick Hotels Corp., 20 N. Wacker Dr., Chicago, Ill., plans by Smith, Hinchman & Gyrils, 800 Marquette Bldg., remodel Ponchartrain Bldg. into hotel, 324 apts., masonry, concrete, reinforcing steel, structural steel, mechanical changes. **$1,000,000.**

Miss., Vicksburg — HOSPITAL — Lutheran Hospital, Vicksburg, hospital addn Approx. **$500,000.**

Mont., Billings—CHURCH, etc.—Catholic Diocese of Great Falls, Bishop Wm. J. Condon, Great Falls, plans by J. G. Link & Co., Electric Bldg., Billings, 1 story Catholic church and school, Fifth St., W. and Custer Ave. Approx. **$250,000.**

N. J., Paulsboro — ADMINISTRATION — Owner, c/o Robert C. Martin, archt., 1700 Walnut St., Phila., Pa., administration bldg. **$250,000.**

N. Y., Brooklyn—APARTMENT—Lornoble Realty Corp., 215 Montague St., Zone 2, plans by Kavy & Kavovitt, Inc., 44 Court St., Zone 2, 6 story apartment, 1109-25 Lorimer St. **$420,000.**

N. Y., Flushing—APARTMENT—Jack & Donald Ruth, c/o George G. Miller, archt., 67 W. 44 St., New York, Zone 18, 6 story apartment, Parsons Blvd. and 30 Ave **$700,000.**

●**N. Y., Forest Hills**—APARTMENT—Howard Apartments, Inc., c/o Phillip Birnbaum, archt., 303 W. 42 St., New York, Zone 18, 12 story apartment, 102 St. between 66 Rd. and 67 Ave. **$3,500,000.**

O., Ada—STUDENT UNION—Ohio Northern University, Dr. F. Bringle McIntosh, pres., Ada, plans by A. A. Traver, Lima, 120x159 ft. student union bldg., W. Lehr Ave. and Union St.

O., Cleveland—HOSPITAL—St. Vincent's Charity Hospital, E. 22 St. and Central Ave., replacing present bldg. and 2 wings **$975,000.**

O., Shiloh—CHURCH—Congregational Christian Church, Rev. Fay Le Meadows, pastor, Phila. Dr. and N. Main St., plans by Walker, Norwick & Templin, American Bldg., Dayton, 1,000 capacity classic-modern church. **$600,000.**

Okla., Muskogee—CHURCH, etc.—First Presbyterian Church, Muskogee, plans by Harrison & Horstman, Manhattan Bldg., church and educational bldg. **$350,000.**

Pa., Glenside—CHURCH—Glenside Methodist Church, Dr. Edward Ray Strayer, chn., Bldg. Comn., Dreshertown Rd., Oreland, plans by A. Henel Fink, 1701 Arch St., Phila., church. **$250,000.**

Pa., Phila.—SYNAGOGUE—Northeast Jewish Community Center, 4301 Tyson St., plans by Beryl Price, 1911 Pine St., synagogue. **$250,000.**

Pa., York—BUILDING—Young Mens Christian Assn., York, plans by Palmer, Fisher, Williams & Nes, 1020 St. Paul St., Baltimore, Md., 5 story, brick, stone, concrete, steel Y. M. C. A. Bldg. **$650,000.** V. R. P. Saxe, 100 W. Monument St., Baltimore, Md., structural engr. Whitman Requardt & Assoc., 1304 St. Paul St., Baltimore, Md., mechanical engrs.

S. D., Pierre—HOSPITAL—St. Marys Hospital, Pierre, hospital. **$650,000.** W. J. Dixon, Mitchell, consult. engr. CD 10/5.

Tenn., Covington—CLINIC—Dr. L. D. Ellis-ton, c/o Estes W. Mann and Wm. C. Mann, archts., 967 Shrine Bldg., Memphis, hospital type clinic. **$395,000.**

Tenn., Memphis—CHURCH—Central Assembly of God Church, c/o Raymond B. Spencer & Assoc., archts., First Natl Bank Bldg., church. **$250,000.**

Tenn., Memphis—EDUCATIONAL—Wesley Memorial Evangelical Methodist Church, c/o Norton & Rice, archts., Falls Bldg., educational bldg. **$375,000.**

Tenn., Nashville—SUPER MARKET—Cooper-Martin, c/o Marr & Holman, archts., Stahlman Bldg., super market. **$250,000.**

●**Tex., Fort Worth**—HOUSING—Ridgway Motors, Inc., c/o E. E. Cloer, pres., 2825 Crockett St., plans by Charles E. Armstrong, Majestic Bldg., 240 unit rental housing, in Ridglea addn **$2,000,000.**

Tex., Houston—ELKS LODGE—Elks Lodge, B. P. O. E., 820 Crawford St., elks lodge, San Jacinto, Tamm and Anita Sts., **$650,000.**

●**Tex., Houston**—DWELLINGS—Strickland-Whipple Constr. Co., 2nd Natl. Bank Bldg., plans by Dunaway & Jones, 4919 Montrose Blvd., two hundred 1 and 2 story frame, dwellings, concrete slab and post fdn., Woodlawn Acres Annex 3. **$1,430,000.**

Tex., San Antonio—HOUSING—General Investment Co., 722 S. Zarzamora St., housing, various locations. **$275,000.**

INDUSTRIAL BUILDINGS

Ala., Birmingham—MILL—Grayson Lumber Co., 715 N. 39 St., rebuilding planing mill, **$100,000.**

Calif., Santa Barbara—WAREHOUSE, etc.—Associated Telephone Co., plans by Chester Carvola, 129 DeLaGuerra Studios, warehouse and maintenance bldgs. Approx. **$100,000** Donald F. Shugart, 35 N. Raymond Ave., Pasadena, consult. engr.

Idaho, Idaho Falls—PLANT—Utah-Idaho Sugar Co., Idaho Falls, plant to transform waste water from beet-sugar refinery into flavoring. **$350,000.**

Ill., St. Charles—FACTORY—St. Charles Mfg. Co., W. Main St., plans by Lester B. Knight & Assoc., 600 W. Jackson St., Chicago, Zone 6, 50,000 sq. ft. factory, **$250,000.**

Kan., Salina—PLANT—John Deere & Co., Moline, Ill., assembly plant at 81 St. By Pass and Crawford Sts **$300,000.**

Ky., Cave City—TERMINAL—Cave City Bus Co., Cave City, bus terminal, **$150,000.**

La., New Orleans—GARAGE—R. S. Mestri, c/o Diboll-Kessels & Assoc., archts., 637 Pere Antoine Court, auto parking garage, **$300,000,** CD 8/3/47.

Miss., Ocean Springs—FACTORY—George Co., Ocean Springs, plans by Carl L. Olschner, Pere Marquette Bldg., New Orleans, La., factory, **$100,000.**

N. Y., Brooklyn—PLANT—Sheffield Farms Co., 524 W. 57 St., New York, Zone 19, plans by Stohldrier & Zetsche Northcourt Bldg., White Plains, altering 6 story milk plant, 223-43 Herkimer St. **$145,000.**

●**N. D., Velva** — STEAM GENERATING PLANT—Central Electric Power Co-operative of Velva, and 8 electric Distribution Assns. in North Dakota, steam generating plant. **$8,500,000.**

●**O., Venice** — RESEARCH LABORATORY — Procter & Gamble Co., Gwynne Bldg., Cincinnati, 2 story research laboratory on 200 acre site, near here. **$1,500,000.** Albert Kahn Associated Architects & Engineers, Inc., 345 New Center Bldg., Detroit, Mich., engr. and archt.

Pa., Phila.—GARAGE—Alden Park Manor Corp., Wissohickon Ave. and School Lane, plans by Edwin Rorke, Whitehall Rd., Norristown, garage. Approx. **$100,000.**

Pa., Phila.—WAREHOUSE, etc.—American Stores Co., 424 N. 19 St., plans by Canteaume & McMullen, 99 Chauncey St., Boston, Mass., warehouse and bakery. **$500,000.**

Pa., Reading—STOCK HOUSE—Old Reading Brewery, Inc., c/o Harry Fischman, 9 and Laurel Sts., stock house addn. **$100,000.** William F. Koelle Sons, Inc., Western Saving Fund Bldg., Phila., consult. engr.

Ont., Ottawa—BUS TERMINAL—Colonial Coach Lines, Ltd., 1188 Dorchester St. W., Montreal, Que., plans by Hazelgrove & Lithwick, 52 Owen St., Ottawa, bus terminal exten., remodeling, Albert St. **$100,000.**

UNCLASSIFIED

●**California**—RURAL DISTRIBUTION LINES—Death Valley Electric Co-operative, Inc., Charles Brown, secy., Baker, 200 mi. rural distr. lines and substations, San Bernardino and Inyo Counties. **$1,776,490.**

Ga., Columbus—BASEBALL PARK, etc.—City, voted bonds, baseball park, **$150,000** and football stadium, **$700,000.** CD 8/25.

Ga., Columbus—STREET LIGHTING—City, voted **$100,000** bonds, street lighting. CD 8/25.

N. J., Rutherford—DRIVE-IN THEATER—Mid West Drive-In Co., Philip Smith, pres., 260 Tremont St., Boston, Mass., drive-in theatre on 24 acre site, Route 8-3 **$450,000.**

Ohio—RURAL DISTRIBUTION LINES—Buckeye Rural Electric Co-operative, Inc., Gallipolis, 57 mi. rural distr. lines and sys. imprvs., Gallia Co. **$185,000.**

●**O., Cleveland**—PARKS—City, City Hall, Lakeside and 6 Sts., imprv various parks. Approved **$1,500,000** bond issue by 58.9% voters. Will be submitted to court for approval. CD 10/11.

O., Lakewood—SWIMMING POOL, etc.—City, City Hall, voted bonds, swimming pool and locker bldg. **$250,000.** CD 8/2.

●**O., Youngstown**—PARKING STRUCTURE—City, City Hall, Boardman and Phelp Sts., downtown parking structure over Erie R.R. tracks, move tracks further into hillside, 1,800 ft. decked parking structure, Wick and Fifth Aves., 300 ft. wide between Commerce and Wood Sts. **$6,000,000.** H. J. Weccheider, engr. Maintenance and Ways, (Western Dist.) Erie R.R. Co., Terminal Bldg., consult. engr. Foundation Engineers, 125 W. Commerce St., engrs. CD 8/19.

Wyoming—GENERATING PLANT—Lower Valley Power & Light, Inc. Freedom, 1000 kw. hydro-electric generating plant, Strawberry Creek, near Freedom. **$150,000.** Harza Eng. Co., 400 Madison St., Chicago, Ill., consult. engr CD 1/19.

Ont., Toronto—ICE ARENA—F. T. Briggs, 61 Haverson Blvd., artificial ice arena, on Lake Shore Blvd. **$175,000.** C. A. Meadows & Assoc., 4 Grange Rd., engrs

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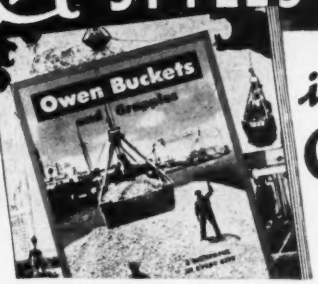

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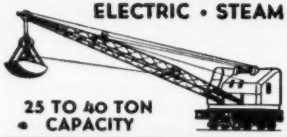

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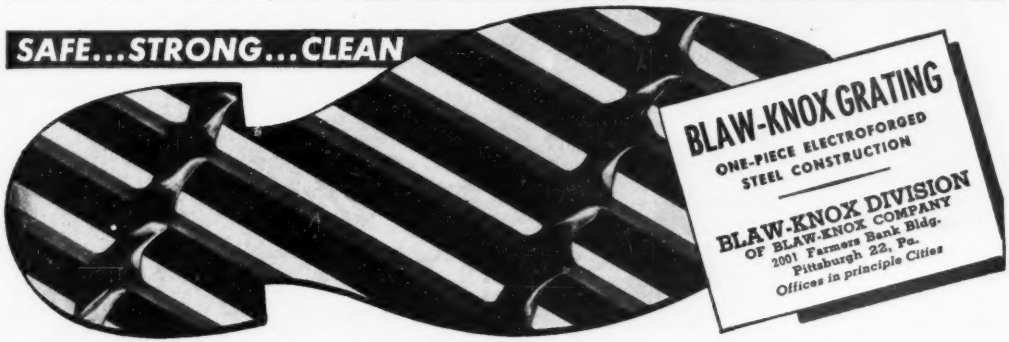

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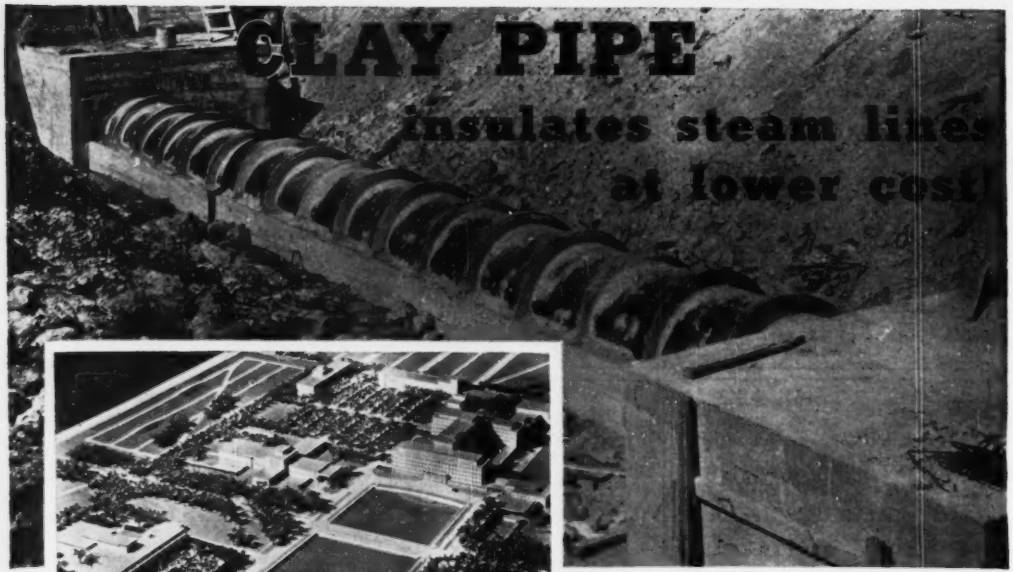

Voorhees, Walker, Foley and Smith, Architects and Engineers on The Ford Motor Company's new Research and Engineering Center at Dearborn, Michigan, specified 36" Vitrified Clay Channel Pipe for insulation of the 10" main steam distribution line, 6" pump discharge line, and the 2" trap discharge line running to the Center's half-dozen buildings. (See diagram below.)

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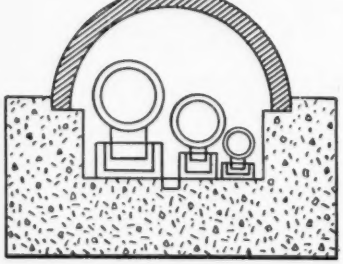

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CONSTRUCTION REPORTS—Second Section

WATER SUPPLY

BIDS ASKED

December 13

N. C., Southern Pines—Town, Mayor C. N. Page, Southern Pines, water works, incl. (1) Modernizing waterworks treatment plant and addns. (2) plumbing (3) electrical work (4) 28,500 lin. ft. 6- to 12-in. c.i. pipe. Plans deposit $25. L. E. Wooten & Co., Capitol Club Bldg., Raleigh, engrs. CD 3/16.

Wis., Lancaster—City, elevated water tank. Ward & Strand, 7 W. Main St., Madison, engrs.

December 15

Tex., Fort Worth—City, W. O. Jones, mgr., 16x30-in. west side water supply mains, $135,000. Plans deposit $15. Freese & Nichols, 407 Dancizer Bldg., engrs. Bids 11/10 rejected, low B. $116,038. CD 11/15, under LB.

December 19

Calif., Monterey Park—City Council, west-side water sys. imprvs., 300,000 gal. reservoir, pumping station, electric sys. pipeline, $59,000. Quinton Eng. Ltd., 816 S. Figueroa St., Los Angeles, engrs. CD 7/16/48.

Bids Asked

Tex., Fort Worth—Ridgeway Manors, Inc., 2825 Crockett Ct., c.i. waterlines, facilities, $40,000. Charles E. Armstrong, Majestic Bldg., archt.

LOW BIDDERS

Md., Hyattsville—Washington Suburban Sanitary Comn., Hamilton St., Nov. 28, Contr. 695-W, approx. 28,000 ft. 20-to-42-in. supply line from Columbia Pike near Paint Branch to Wheaton, from Ligon & Ligon, 3310 Ridgewood Ave., Baltimore, $691,836. CD 11/4.

CONTRACTS AWARDED

●**Calif., San Francisco**—Public Utilities Comn., City Hall, 34 mi. pipeline from Irvington Portal to Pulgas near Crystal Springs Lake, Spec. 524, Sects. A and C, to United Concrete Pipe Corp., Box 425, Baldwin Park, $4,246,465; Sect. B, to Artukovich Bros., 16200 S. Atlantic Ave., Paramount, and Steve P. Rados, 2975 San Fernando Rd., Los Angeles, $4,097,546. Bids 11/10 CD 11/18, under LB.

SEWERS, WASTE DISPOSAL

BIDS ASKED

December 12

Conn., Hartford—State, G. Albert Hill, hy. comr., State Office Bldg., 813 lin. ft. storm water sewer in River St., Windsor. Plans deposit $1.47.

December 16

Tex., Rochester—City, sanitary sewers. $60,000. Plans deposit $15. Joe E. Ward, 545 Nacol Bldg., Wichita Falls, archt.

Va., Blacksburg—At office S. K. Cassell, bus. mgr., Virginia Polytechnic Institute, incinerator and complete incinerator and chimney for use at educational institution. $35,000. Plans deposit $10. Wiley & Wilson, 905 Peoples Bank Bldg., Lynchburg, consult. engrs.

December 22

Tex., Thorndale—City, sanitary sewer collection sys. and disposal plant. $55,000. The Marvin Turner Engineers, Nalle Bldg. Annex, Austin, engrs.

Bids Asked

Tex., Fort Worth—Ridgeway Manors, Inc., 2825 Crockett St., sanitary sewers. $65,000. Charles E. Armstrong, Majestic Bldg., archt.

LOW BIDDERS

†**N. M., Los Alamos**—U. S. Atomic Energy Comn., Los Alamos, Nov. 16, sewage waste treatment plant, Inv. No. 291-50-19, from Craftsman Constr. Co., Inc., Santa Fe $353,027. Est. $200,000-$400,000.

CONTRACTS AWARDED

●**Calif., San Francisco** — Dpt. P. Wks., City Hall, Lake Merced sewer tunnel, Sect. B, Spec. 20,621, to M. & K. Corp., 405 Montgomery St., Frederickson & Watson Constr. Co., and Piombo Constr. Co., 873 81 Ave., Oakland, $1,381,530.

●**Fla., Tampa**—Bd. Representatives, City Hall, sewage disposal system and sewer imprvs., sewer imprvs. Div. E1, to Higgins Inc., P. O. Box 2509, Sarasota, $241,249***Div. E2, to Marlani-O'Brien, Inc., 301 22 St. S., St. Petersburg, $93,092***Divs. E3, E4 and E5, to Stansfield Constr. Co., Inc., 2401 Horatio St., Tampa, $385,262***intercepting and trunk sewers, Divs. A1, A2, B1, C1, C2 and C3, to Cone Bros. Constr. Co., Tower Ave. and Cumberland St., Tampa, $1,426,775***river and channel crossings, Div. D1-6, Carpenter Constr. Co., 700 Bank of Commerce Bldg., Norfolk, Va., $332,853***Krause St. Pumping Station structure Div. G1, and sewage treatment plant sludge beds and sedimentation tanks, Divs. K2 and K3, to Lewis & McDowell, Inc., 285 Madison Ave., New York, N. Y., $478,455 and $423,484 respectively***pumping equip., Div. G2, to Fairbanks, Morse & Co., 760 Lee St. S. W., Atlanta, Ga., $55,048***electrical work, Div. G3, to Tampa Armature Works, Inc., 401 S. Morgan St., Tampa, $48,520***sludge collector mechanisms, Div. L1, to Jeffrey Mfg. Co., E. 1 St., Columbus, 16, O., $36,365***screening equip., Div. L2, to Chain Belt Co., 4700 W. Mitchell St., Milwaukee, Wis., $8,973. Grand total $3,30,016.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

December 12	**Tennessee**
Connecticut	**Wisconsin**
December 13	**December 20**
West Virginia	**Indiana**
December 16	**Maryland**
Kansas	**Virginia**
Kentucky	**Washington**
December 21	
Delaware	
New York	

December 20

†**Maine**—Bureau P. Rds., Dpt. Commerce, c/o Acadia National Park Office, Bar Harbor.

Hancock Co.—2 rein.-con. structures with stone facing, 0.015 mi. and 0.47 mi. roadwork, Proj. 10A2-10A3-10A5. Plans deposit $10. H. J. Speiman, div. engr

LOW BIDDERS

Iowa—State Hy. Comn., Ames, Nov. 22, multiple span I-beam, underpass bridge, pumping plant for underpass lighting sys. 0.8 mi. grading, paving storm sewer constr. etc. U. S. 20 in Waterloo (on Independence Ave.) from Vinton St. east Steely St. and on Vinton St. from Lafayette St. northerly to Independence Ave. UG-62 (6), Black Hawk Co., from A. Olson Contr. Co., Waterloo, $382,822. CD 10/11.

Maryland — State Rds. Comn., Baltimore, Nov. 22, 101 ft. span steel plate girder bridge to carry Washington National Pike over U. S. Rte. 15, approx 2 mi south of Frederick City Line, dual superstructure each 30 ft wide supported on rein.-con. abutments, rein.-con., stone wings, Contr. F-425-4-615, Frederick Co., from F. Pecora Constr. Co., 204 E Biddle St., Baltimore, $341,097. CD 11/9.

Michigan—State Hy. Dpt. Escanaba, Nov. 22, 2 bridges crossing west branch of Firesteel River 3.8 mi. northeast of Moss and crossing each branch of Firesteel River 4.6 mi. northeast of Moss, and 1.478 mi. approach grading, drainage, structures, stabilized aggregate surf. on M26 (relocated) FBL of 66-4-1, FG2 of 66-41-4, F 66 of 32 CZ; F-194 (5), Ontonagon Co., from John K Jakson, Ironwood, $361,384. CD 11/14.

●**New York**—Bureau Contracts & Accounts, Albany, Nov. 22, 3 grade separation structures carrying tracks of New York Central, Erie and D. L. & W. railroads over reconstruction sect. of Delaware Ave. in city of Buffalo, incl. twin 95 ft. span plate girder bridges at New York Central crossing between Linden and Knox Aves., single span 95 ft. long plate girder bridges for Erie R. R. and the D. L. & W. R. R. crossings between Hinman and Comet Aves., 0.26 mi. b. conc. paving Delaware Ave., etc., Erie Co., from H. F. Stimm, Inc., Ellicott Square, Buffalo, $1,078,523 est. $1,216,000***reconstruct 2 bridges and 0.35 mi. approach road over relocated and improved secta. of Onondaga Creek in city of Syracuse, incl. 3 span I-beam bridge on W. Seneca Turnpike (Route 20N) and single span I-beam bridge 78 ft. long on Dorwin Ave., etc., Onondaga Co., from Triple Cities Constr. Co., 17 Tompkins St., Binghamton, $277,294 est. $327,173***construct 3 span I-beam bridge 252 ft. long over improved sect. of L'Hommedeiu Creek, on relocated Route 225 in village of Montour Falls exten. from Catherine St. eastward for 0.58 mi. to point on Broadway St. 400 ft. east of L'Hommedeiu St. incl. 0.53 mi b. conc. paving, etc., Schuyler Co., from Bero Eng. & Constr. Corp., McKinley Bldg., Buffalo, $380,515 est. $477,000. Cancelled bids to have been opened Nov. 22, c. conc. paving, one railroad separation beam bridge 0.44 mi. grade separation of N. Y. C. R. R. with New Scotland-Wolf Hill, S. H. 166, Albany Co., $362,000, will readvertise. CD 11/2.

North Carolina—State Hy. & P. Wks. Comn., Raleigh, Nov. 22, bridge over Buffalo Creek at South Carolina State Line on county road between Earl, N. C., and Blacksburg, S. C., Proj. No. BS-9-7-80-32, Cleveland Co., from F. A. Triplett, Inc., Box 297, Chester, S. C., $53,229, est. $50,000-$75,000, structures on 5.36 mi. U. S. 29 and 70 from point on U. S. 29 and 70, approx. 2 mi. west of Thomasville north to a point on county road northeast of Thomasville, Proj. No. 5282, Davidson and Randolph Counties, from John H. Brinkley, Thomasville, $214,020 est. $225,000-$250,000. CD 11/11.

Wisconsin—State Hy. Comn., Madison, Nov. 22, Contr. 1 Structure F-79-1, 0.155 mi. The Racine Street Bridge City St. from Station 6 plus 04.25 to Station 14 plus 22, Menasha, Proj. U 09-1 (16), Winnebago Co., from C. R. Meyer & Sons Co., Oshkosh, $485,837. CD 10/26.

CONTRACTS AWARDED

New York—Bureau Contracts & Accounts, Albany, reconstruct 555 ft. viaduct at northerly end of Melrose Ave. and new 60 ft. span bridge carrying Melrose and Brook Aves. over New York Central R.R. tracks, Bronx Co., to Meade & Holler Contr. Corp., 260 E. 161 St., New York, Zone 51, $510,119. Bids 9/19, CD 9/19, under LB.

Wisconsin and Minnesota—State Hy. Comn., Madison, Wis. and Comr. Hys., State of Minnesota, at Office State Hy. Comn., Madison, Wis., superstructure B-55-911, The Hudson Interstate Bridge, 0.439 mi. U. S. Hy. 12, Contr. 1, F. I. 66-5 (8), St. Croix Co., Wis. and Washington Co., Minn., to Allied Structural Steel Company and Clinton Bridge Co., 20 N. Wacker Dr., Chicago, Ill., $825,414. Bids 11/22. CD 10/28.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

December 12	**Maryland**
Connecticut	**New Jersey**
December 13	**Virginia**
Maryland	**December 21**
Massachusetts	**Delaware**
Ohio	**New York**
West Virginia	**Nova Scotia**
Nova Scotia	**December 22**
December 16	**California**
Kansas	**New Jersey**
Kentucky	**January 4**
Tennessee	**Nova Scotia**
December 19	**January 11**
Nova Scotia	**Nova Scotia**
December 20	**January 12**
Indiana	**Nova Scotia**

On or About December 15

†**Georgia**—U. S. Eng., P. O. Box 1169, Mobile, 7, Ala relocation roads to Macedonia and Goodson Cemeteries, Bartow Co., Serial No. CIVENG-01-076-50-36.

December 20

New Jersey—New Jersey Turnpike Auth., 65 Prospect St., Trenton, Zone 8.

Union Co.—embankment, grading, soil stabilization, constr. box culverts, railroad track supports and other minor structures, drainage, etc. with construction of New Jersey Turnpike through lands of Esso Standard Oil Company, Bayway Refinery, Linden, Contr. 1. Plans deposit 15. Edward & Kelcey, Frederic R. Harris, Inc., and O. J. Porter Co., Associated, 3 Williams St., Newark, engrs.

December 21

†**Washington**—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, access highway, Chief Joseph Dam, Okanogan Co., Serial No. CIVENG-45-108-50-38. CD 10/12.

Bids Asked

Conn., New Haven—City, Wm. Barry Engr. Dpt., Hall of Records, (local bidders) bit paving Pond Lily Ave. CD 8/20/43

Tex., Fort Worth—Ridgeway Manors, Inc., 2825 Crockett St., street constr. and asph. paving, $60,000. Charles E. Armstrong, Majestic Bldg., archt.

LOW BIDDERS

California—State Div. Hys., Los Angeles, Nov 25. plant mix on untreated rock base, rein.-con. bridge 4.5 mi. between 1.5 mi. west of Calabasas and 1.6 mi. east of Malibu Junction, Los Angeles Co. from Basich Bros. Constr. Co., and Basich Bros., Box 151, Alhambra, $719,599; plant mix surf. 1.1 mi. East Foothill Blvd, Mt. Ave. between Shamrock Ave. and Huntington Dr., Monrovia, b. conc. on cement treated base 1.6 mi. at Pacioma Creek and Sayre Ave., San Fernando and Los Angeles, Los Angeles Co., from Vido Kovacevich Co., 5300 Imperial Hy., South Gate, $100,469 and $230,791 respectively. CD 10/31.

Maryland—State Rds. Comn., Baltimore, Nov. 22, furnishing, del., applying b. conc. resurf., Spec. B, on 3.972 mi. U.S. Rte. 219, beginning at Gortner and exten. southwesterly to Red House, Contr. G-248-5-615, from Keeley Constr. Co., Clarksburg, W. Va., $98,445; grading, drainage, wid'n, resurf. roadway and constr. relocation 4.036 mi. along U.S. Rte. 213 beginning at junction with State Rte. 444 W. of Locust Grove and exten. easterly to western town limits of Glena, Contr. K-173-1-215, from Bero Eng. & Constr. Co., Box 477, Hampton, Va., $436,192. CD 11/9.

●**New York** — Bureau Contracts & Accounts, Albany, Nov. 22, reconstructing with 40 ft. c. conc. paving 0.97 mi. Route 5, extend. northwestward from point in village of Warrensburg, etc., Warren Co., from Shackett & Moraes, Inc., Beacon, $209,326. Est. $240,000*** b. conc. or c. conc., 24 ft. wide paved arterials, separated by a mall, 7.4 mi. previously graded sect. Route 17 extend. easterly from E. Water St. viaduct in city of Elmira to point east of the hamlet of Lowman, etc., Chemung Co., b. conc. paving from Arnie Bros. Inc., 560 S. Main St., New Britain, Conn., $1,416,646; c. conc. paving same road, from Potter-DeWitt Corp., Pavilion, $1,414,929, est. $1,901,000*** construct 0.28 mi. Cross Bronx Expressway Junction No. 177 St., extend. from Bronx River Ave., southeastward to Croes Ave., incl. grading, drainage for future twin 36 ft. roadways, separated by mall, 2 bridges and footings for a third; ½ mi. sheet asph. paving on service roads and local streets, sidewalks, curbs and utilities, Bronx Co., from Poirier & McLane Corp., 33 W. 42 St., New York, $1,311,667, est. $1,685,000. Cancelled bids to have been opened Nov. 22, b. conc. 1.03 mi. mix. work, 0.62 mi., 1.05 mi. City of Buffalo, Niagara Thruway (Court St. to Porter Ave., Erie Co., $511,000, will re-advertise. CD 11/2.

North Carolina—State Hy. & P. Wks. Comn., Raleigh, Nov. 22, from Barrus Constr. Co., Box 561, Kinston, sand asph. surf. course 9.89 mi. from N. C. 118 near Epworth School approx. 5 mi. northwest of Vanceboro north through Honolula, Garnersville and Stokestown to

N. C. 42 at Chico School, Proj. No. 2-558, S-273 (2), **$76,428**, est. $50,000-$75,000¢ reinf. sand asph. surf. course and structures. 7.93 mi. from point U. S. 258 northwest of Richlands north to N. C. 41 west of Comfort, Proj. No. 2-8-20-203, 2-9-22-201, Onslow and Jones Counties, **$92,948**, est. 75,000-$100,000, sand asph. surf. course 7.3 mi. from Hodges Fork north to LaGrange-Institute Rd., from Jones-Lenoir Co. line north of Pleasant Hill, north to N. C. 12, Proj. No. 2-9-21-204, Lenoir Co., **$55,858**, est. $50,000-$75,000***from Suber & Co., Whitemire, S. C., 5.36 mi. U. S. 29 and 70, approx. 2 mi. west of Thomasville north to point on county road northeast of Thomasville, Proj. No. 5282, Davidson and Randolph Counties, **$257,085** est. $250,000-$300,000***from Blythe Bros Co., 424 S. Brevard St., Charlotte, STBC, sand asph. base and bit. conc. surf. 17.46 mi. U. S. 220, N. C. 211, from south city limits of Biscoe on U. S. 220 through Candor and Norman to Int. with N. C. 73, from point in N. C. 211 at Edge of pavt., on U. S. 220 in Candor to Moore Co. line, Proj. 5532 F-688 (1), 5554 F-689 (1), Montgomery and Richmond Counties, **$275,936** est. $200,000-$400,000, STBC, sand asph. base, b. conc. surf. 13.19 mi. U. S. 1, from point in U. S. 1 at end of 22 ft. pavement, approx. 5.25 mi. east of Rockingham to beginning of Drowning Bridge Proj. 6675, F-1129 (6) F-47 (9), Richmond Co., **$159,508** est. $175,000-$200,000***from W. E Graham & Sons, Cleveland, traffic bound macad., bit. surf. tr. and structures 2.19 mi. from edge of pavement at intersection with BS-8-7-75-16 in Mountain Park, east to point in Zephyr, Proj. 8-408, S-318 (1), Surry Co., **$62,469** est. $50,000-$75,000***from Wayne Eng. & Constr. Co. Inc., Box 254, Mount Olive, grading, STBC bit. surf. tr. of sand asph. surf. 12.44 mi. from point 4 mi. southwest of Smithfield on U. S. 701 southeast 12 mi. through Bentonville to paved road at Ebernezer Church, Proj. 4-9-36-203 Johnston Co., **$92,242** est. $100,000-$125,600; grading, STBC, bit. surf. tr. of sand asph. surf. course 16.5 mi. Part 1, from Fremont northeast to Wilson Co. line, Part 2, from a point on Part 1 north of Eureka to pavement in Eureka, Part 3, from Fremont northwest through Pinkney, Johnson Co. line, Proj. 4-9-39-203, Wayne Co., **$130,345** est. $150,000-$175,000***from Propst. Constr. Co. Inc., Concord, STBC, traffic bound macad., bit. surf. tr. or sand asph. surf. course or bit. conc., 24 mi. surf. s. sects. of county roads, Proj. 7-9-59-201, Anson Co., **$180,663** est. $200,000-$225,000***from Sam Finley, Inc., 1615 Cleveland Ave. S. W., Roanoke, Va., added material, bit. surf. tr. or sand asph. surf. course or b. conc. 19.8 mi. surf. 6 sects. of county roads, Proj. 7-9-62-201, Montgomery Co., $81,951 est. $75,000-$100,000***from Dickerson, Inc., Monroe, added material, bit. surf. tr. or sand asph. surf. course or b. conc. 29.8 mi. surf. 8 sects. of county roads, Proj. 7-9-63-201, Richmond Co., **$126,355** est. $125,000-$150,000. CD 11/11, 11/14 and 11/16.

CONTRACTS AWARDED

●**Massachusetts** — Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, state hy. and bridge, Proj. F-273 (7) FG-273 (8), Leominster, to Bayer & Mingolla Constr. Co., Inc., 90 Lincoln St., Worcester, **$1,050,129**. Bids 11/15, awarded 11/22. CD 11/22, under L/I.

●**South Carolina**—State Hy. Dpt., Columbia, to George Lokey Contg. Co., Augusta, Ga., bit. surf. 5.701 mi. Road 16 (Route 204) from Reevesville to U. S. Route 178 and 1.138 mi. Roads 60, 18 and 134 streets in town of Reevesville, S. C. Dock 2 and 18.256, Fed. Aids 1 and 18.258, Dorchester Co., **$62,563**; grading and B. S. 5.548 mi. Road 40 from U. S. Route 15 by way of Vance to Route 6 and 2.81 mi. Road 91 from Route 121 to Route 31. S. C. Dockets 18.344, Parts 1 and 2 and 18.324, FAP S-353 (1), Orangeburg Co., **$71,520**; bit. surf. 6.102 mi. Roads 112 and 52 from Route 175 at Coopers northwesterly to Road 52. S. C. Docket 45.262, Williamsburg Co., **$56,471***to Clausen-Lawrence Constr. Co., Lucusta, Ga., b. conc. surf., earth type base course 10.802 mi. (dual lane) U. S. Route 1 from Road 33 west of Aiken to near Hamburg S. C. Docket, 2.218.3, FAP FI-431 (5) Aiken Co., **$383,361***to Banks Constr. Co., Charleston, bit. surf. 5.952 mi. Road 32 from Dorchester Co. line to Route 31 and 3.38 mi. Road 47 from Road 32 to Route 31. S. C. Docket 8.279, Parts 1 and 2 Berkeley Co., **$91,994**.

To Blankenship Bros., 1319 W. Trade St., Charlotte, N. C., bit. surf. 2.559 mi. Road 17 from Road 54 northeasterly to Route 105 near Wilkinsville and 6.385 mi. Roads 69 and 17 from Route 105 south of Wilkinsville, S. C. northeasterly to Road 16, S. C. Docket 11.247 Parts 1, 2 and 3, FAP S-313 (1) and S-313 (2) Cherokee Co., **$98,973***to Carolina Contg. Co., 1112½ Taylor St., Columbia, bit. surf. 12.956 mi. from U. S. Route 76 in Ayida to Route 763 near Darlington, S. C. Docket 16,266 FAP S-360 (1), Darlington Co., **$106,897***to Palmetto Constr. Co., Inc., Sumter Hy., Columbia, bit. surf. 2.175 mi. Roads 83 and 98 from U. S. Route 76 in Timmonsville, southeasterly to county road 1.353 mi. Road 35 from Long Branch Cross Roads to Road 45 and 3.451 mi. Road 45 from Road 35 to U. S. Route 301 S. C. Dockets 21.295, 21.296 and 21.299k FAP S-232 (1), Florence Co. **$61,809**.

To American Constr. Co., Sumter Hy., Columbia, bit. surf. 15.521 mi. Road 17 from U. S. Route 701 to Route 511 at Rhems, S. C. Dockets 22.257, Parts 1, 2 and 3 and 45.267 FAP S-318 (1), Georgetown and Williamsburg Counties, **$173,175***to Cherokee, Inc., Sumter Hy., Columbia, bit. surf. 10.378 mi. Road 23 from U. S. Route 501 near Cool Springs northerly to Route 917 S. C. Docket 26.269 FAP S-333 (1), Horry Co., **$134,273***to Ridlehuber & Co., Greenwood, grading and B. S. 7.661 mi. Road 40 from U. S. Route 221 near Ora by way of Martins Cross Roads to Road 23, S. C. Docket 30.272, Laurens Co., **$61,692***to Spotts & Co., Newberry, grading, B. S. 3.514 mi. Road 46 from Road 134 northwesterly to Route 288, 0.3 mi. Road 46, being approaches to bridge at Cane Creek, 2.241 mi. Roads 108 and 107 from Route 183 at Coneross Church northeasterly to Road 35 (Route 288) south of West Union and 3.737 mi. Road 60 from Route 28 at County Land northwesterly to Route 28 near West Union, S. C. Dockets 37.294, 372.297, 37.298 and 37.299, FAP S-322 (1) and S-22 (2), Oconee Co., **$101,09**. Grand total $1,403,767. Bids 11/1. CD 11/9.

West Virginia—State Hy. Comm., Charleston, c. conc. and guard rail 0.86 mi. Alloy-Gauley Bridge Rd., FI-263 (13), Fayette Co., to Boso & Ritchie, Inc., Ravenswood, **$525,076**. Bids 11/15, awarded 11/16. CD 11/23, under LB.

EARTHWORK, WATERWAYS

BIDS ASKED

December 13

†**Illinois**—U. S. Eng., U. S. Courthouse and Custom House, St. Louis, 1, Mo., closure structures Grand Tower Drainage and Levee dist. (proj. II-H) Preston Levee and Drainage Dist. (Proj. II-B), Jackson and Union Counties, CIVENG 23-065-50-41.

December 14

La., Livingston—Livingston Parish Police Jury, approx. 400,000 cu. yd. channel excav.

December 15

†**Indiana** — U. S. Eng., 830 W. Broadway, Louisville, clearing reservoir area, Eagles Mill Reservoir, Mill Creek, **$100,000-$200,000**.

†**Louisiana**—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, pile dike constr., Red River, Boyce, Rapides Parish, Item D-142, S-R, CIVENG 16-047-50-138.

Wash., Yakima—City, City Hall, irrigation pipes in area between Lenox and Mead from Voelker to 12 Aves. and from Stewart to Mead between Broadway and 8, in southwest part of city. $191,000. A. B. Collins, city engr.

December 16

†**Nebraska**—U. S. Eng., 1709 Jackson St., Omaha, Zone 2, underseepage control facilities for Omaha Levee System, Unit IV, Areas A and B, Inv. 91. CD 11/9.

On or About December 20

†**Mississippi and Arkansas**—U. S. Eng., P. O. Box 97, Memphis 1, Tenn., 1,140,000 cu. yd. Riverside enlargement, roadway embankment and berms, Flower Lake, Miss., L-671, approx. stations 45/0-49/0, along left bank of Mississippi River, in Tunica Co., Miss., beginning at point approx. 4 mi. N.W. of Clayton, Miss. and exten. S.W. down levee approx. 4 mi. to point approx. 6 mi. N.W. of Dundee, Miss.; 680,000 cu. yd Riverside enlargement roadway embankment and berms, Laconia, Ark., R-605, approx. Stations 54/53-53/14, along right bank of Mississippi River in Desha Co., Ark., beginning at point where Laconia Circle levee ties in to Mississippi River levee, said point being approx. 5 mi. S. of Phillips-Desha Co. Line and about 5½ mi. S.E. of Snow Lake, Ark., exten. S.W. down Mississippi River Levee approx. 4½ mi., CIVENG 40-041-50-69.

December 20

†**Louisiana**—U. S. Eng., foot of Prytania St., New Orleans, furnishing, installing operating machinery and electrical sys. for Calcasieu Lock, Calcasieu Parish, located near intersection of Calcasieu River and Intracoastal Waterway at about Mile 238 of waterway about 10 mi. S. W. of Lake Charles.

December 22

†**California**—Bureau of Reclamation, Dpt. Interior, Bldg. 1-A, Denver, Federal Center, Denver, Colo., furnishing, del. at storage yards near Woodlake, Lindsay and Delano, 254,000 lin. ft. 10- to 15-in. standard concrete irrigation pipe incl. 342,000 lin. ft. reln.-con. pipe for 25 to 50 ft. heads from 12- to 72-in. inclusive for Ivanhoe Irrigation District, Lindmore Irrigation Dist., Unit 3, and Southern San Joaquin Municipal Utility District, Unit 3, Central Valley Proj., Spec. 2853. L. N. McClellan, ch. engr. CD 4/14/44.

CONTRACTS AWARDED

●†**California**—U. S. Eng., Wright Bldg., Sacramento, Pine Flat Dam near Piedra, approx. 3½ mi. upstream or easterly from Piedra on Kings River, Fresno Co., Serial No. CIVENG-04-0167-50-5, Spec. 1400, to Guy F. Atkinson Co., 10 W. Orange Ave., South San Francisco, Bressi & Bevanda Constructors, Inc., Box 439, North Hollywood, Charles L. Harney, Inc., 575 Berry St., San Francisco, J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C., and A. Teichert & Son, Inc., Box 1113, Sacramento, **$24,339,777**. Bids 11/1. CD 11/7, under LB.

AIRPORTS AND AIRBASES

BIDS ASKED

December 14

Neb., Lincoln—CONTROL TOWER—City, City Hall, control tower at municipal airport. $61,745. D. L. Erickson, city engr.

Sask., Saskatoon — HEATING PLANT — Canadian Commercial Corp., engrs., 70 Lyon St., Ottawa, Ont., central heating plant at R. C. A. F. Airport, for Government of Canada, Hunter Bldg., Ottawa, Ont. Plans deposit $25. Dpt. National Defense, Cartier Sq., Ottawa, Ont., archt.

PUBLIC BUILDINGS

BIDS ASKED

December 12

B. C., Esquimalt—HOUSING—J. L. Adams, Central Mortgage & Housing Corp., 360 Homer St., Vancouver, 77 housing units, Approx. $450,000. Plans deposit $25.

Ont., Manor Park (Ottawa)—SCHOOL—C. Burgess, archt., 52 Queen St., Ottawa, 10 room school for Manor Park School Bd., C. Rutledge, chn., P. S. S 29, Manor Park, Approx. $275,000. Plans deposit $50. CD 11/17.

December 13

Md., Upper Marlboro — SCHOOL — Prince George's Co. Bd. Educ., Upper Marlboro, 2 story, brick, concrete, cinder block, steel, high school, Hyattsville, Plans deposit $25. Ross & Walton, 3510 R. I. Ave., Mt. Ranier, archt. CD 8/5/46.

N. Y., New York—HOUSING TOPSOIL and PLANTING—New York City Housing Auth., 63 Park Row, Zone 7, topsoil and planting for Bronx River Houses (Proj. No. NYS-39) in area bounded by E. 174 St., Harrod and Bronx River Aves., Bronx Boro. Plans deposit $25.

O., Dayton—SCHOOL—Bd. Educ., C. L. Borhardt, clk., 232 N. Main St., 2 story addn. to Jane Addams School and altering part of second floor of present bldg., Victory Dr. Plans deposit $50. Rial T. Parrish, 940-945 U. B. Office Bldg., archt. CD 11/28/45.

December 14

Ill., Evanston — TECHNICAL — Evanston Twp. High School, 1600 Dodge St., 1 and 2 story, brick, steel, concrete technical bldg. $650,000. Perkins & Will, 309 W. Jackson St., archts. CD 8/12.

Mass., Haverhill — HOUSING — Haverhill Housing Auth., George E. McGregor, chn., 2 story, bamnt., garden apartments, State Aided Proj. Haverhill 200-1. Approx. $250,000, Plans deposit $50, refundable. 12/1/48.

Mass., Holyoke—HOUSING—City of Holyoke Housing Auth., Edw P. Bagg III, chn., Jackson Parkway, brick garden apartments, State Housing Proj Holyoke 200-1, approx. $250,000, Plans deposit $50, refundable. CD 9/14/46.

●**Mich., Waterford** — SCHOOL — Waterford Twp. Schools, 1150 Scott Lake Rd., Waterford Twp., Oakland Co., rein.-con. steel, masonry high school, Waterford Twp. $1,800,000. Plans deposit $50. Frederick D. Madison, 230 Wayne St., Oakland Bank Bldg., Royal Oak, archt. CD 12/7/44.

Neb., Holdrege—SCHOOL—Bd. Educ., Holdrege, Washington School. $250,000. J. W. Radotinsky, 1401 Fairfax Trafficway, Kansas City, Kan. archt. CD 5/26.

●**Pa., Phila.**—YOUTH STUDIES CENTER—City, Managers of House of Dention, Common Pleas Court No. 5, City Hall, youth studies center, $2,000,000. Carroll, Grisdale & Van Alen, 1616 Walnut St., archts. CD 9/22.

N. S., Yarmouth—BOILER HOUSE, etc.—Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont., boiler house and chimney at Government Bldg. 4. Approx. $50,000. Plans deposit $25.

About December 15

Kan., Lawrence—CITY—City, City Hall, city bldg., $290,000, Carl G. Ossman, 418 Central Bldg., Topeka, Kan., archt. CD 7/15.

December 15

Ind., Bedford—SCHOOL—Bd. School Trustees, Bedford, 1 and 2 story, 134x241 ft., brick, stone, rein.-con., structural steel school, $450,000. McGuire & Shook, 1400-01 Fletcher Trust Bldg., Indianapolis, archts. Bevington, Taggart & Fowler, 730 Ind. Pythian Bldg., Indianapolis, engrs. CD 11/23.

●**Mass., Attleboro** — HOUSING — Attleboro Housing Auth., John E. Turner, chn., 27 Park St., 100 unit, garden type bldgs., South Ave. Section, State Aided Proj. 200-1, $1,000,000, Plans deposit $50, refundable, S. S. Eisenberg, 69 Summer St., Boston, archt. CD 6/24.

N. H., Lancaster—SCHOOL—Town, C. Newton Heath, supt. Schools, Lancaster, 1 and 2 story, brick, steel school. Plans deposit $75. Extended date. Perley F. Gilbert Assoc., 53 Central St., Boston, archts. CD 11/17.

†**N. J., Trenton**—LABORATORY—Yards & Docks, Annex, Navy Dpt., Arlington, Va., naval aeronautical laboratory (heating, cooling and dehumidification work). $1,000,000-$2,000,000. Extended 12/15.

N. C., Raleigh—DORMITORY—State of North Carolina, Raleigh, 2 story, 100-patient men's dormitory, at Dix Hill, State Hospital. Approx. $350,000.

Pa., Hatboro — SCHOOL — Hatboro School Dist., Hatboro, school. $250,000. J. M. Blew & Son, 1831 Chestnut St., Phila., archts.

Tenn., Jefferson City—SCHOOL—Jefferson Co., Jefferson City, Market School. Plans deposit $100. Bauman & Bauman, 813½ Market St., Knoxville, archts.

Tex., Houston—SCHOOL—Houston Independent School Dist., 1600 Washington St., Garden Villas School. $300,000. Stayton Nunn, 2425 Ralph St., co-ord. archt. H. C. Moore, 2008 W. Alabama St., archt. CD 2/11.

Wash., Oroville — SCHOOL — School Dist. 405, Oroville, school addn. $250,000. Mallis, De Hart & Hopkins, Lyon Bldg., Seattle, Zone 4, archts. CD 6/9/48.

†Puerto Rico, Fort Buchanan—QUARTERS —U. S. Eng., Box 5043, Ancon, Canal Zone, 31-man Bachelor Officers' Quarters, Serial No. ENG-96-505-50-16.

Ont., Centralia—SCHOOL—A. J. E. Smith, engr., c/o Central Mortgage & Housing Corp., 395 Fleet St. W., Toronto, 1 story, 58x280 ft., concrete bsmnt., frame, steel 18 room school, at D. W. D. Housing Development, Approx. $375,000. Plans deposit $25. Barott, Marshall, Montgomery & Merrett, Canada Cement Bldg., Montreal, Que., archts.

December 16

Ala., Tuscaloosa — HOSPITAL EXCAVATION, etc.—Druid City Hospital, c/o Charles H. McCauley, archt., Jackson Bldg., Birmingham, excavation and foundations for hospital. Plans deposit $25. CD 1/17.

N. Y., Brooklyn — STREET and YARD IMPRVS.—New York City Housing Auth., 63 Park Row, New York, Zone 7, street and yard imprvs. for Boulevard Houses (Proj. No. NYC-16) in area bounded by Linden Blvd., Ashford St., Wortman Ave., Hendrix St., Stanley and Schenck Aves., Brooklyn Boro. Plans deposit $25.

December 17

Ga., Atlanta—HOSPITAL—The Fulton-De Kalb Hospital Auth., c/o Abreau & Robeson, 22 Marietta St. Bldg., negro hospital, Proj. GA-52, Approx. $500,000. Plans deposit $100. CD 1/13.

December 19

Mont., Billings—DORMITORY—State, Bd. Educ., Helena, 3 story, bsmnt., steel, concrete, brick, limestone, L-shaped women's dormitory, Eastern Montana College of Educ. $271,250. CD 11/14.

December 20

●Calif., Los Angeles—SCHOOL—Bd. Educ., 1425 S. San Pedro St., Westchester High School, music bldg., cafeteria, utility bldgs., home economics and crafts bldg., admin. and library, science bldg., **$1,553,000.** Spaulding, Rex, De Swarte, 3305 Wilshire Blvd., archts. CD 8/16/48.

N. D., Jamestown—EMPLOYEES—Bd. Admin., Bismarck, employees' bldg. at State Hospital, $250,000. W. F. Kurke & Assoc., 1117 13 Ave., N. Fargo, archts. CD 12/16/48.

†Washington — STEEL SUPPORTS, etc. — Bureau Reclamation, Dpt. Interior, Bldg. 5-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars at Odair, Wash., steel supports for unit cooler for Unit R 1, and misc. structural steel, aluminum and grating for service bay LS-3, Grand Coulee Power Plant, Columbia Basin Proj., Spec. 2841. L. N. McClellan, cb. engr.

●†Alaska, Anchorage —HOUSING— Alaskan Air Command, Fort Richardson, 1,058 housing units in east area of Fort Richardson, $10,589,-000; 572 units in west area $10,000,000. CD 8/13/48.

December 21

†Arizona-Nevada — HEATING and VENTILATING SYSTEMS — Bureau Reclamation, Dpt. Interior, Aviola Bldg., Phoenix, Ariz., heating and ventilating sys. for district dispatchers' bldg. approx. 3 mi. west of Phoenix, near Phoenix substation, Davis Dam Proj., Spec. 2843.

●Calif., Los Angeles — LAW — Bd. Regents University of California, 405 Hilgarde Ave., 70,000 sq. ft. law bldg. $1,500,000. Risley & Gould, 2502 W. 3 St., archts.

Calif., Martinez—SCHOOL—Alhambra Union High School Dist., Martinez, high school buildings, incl. 2 story, concrete classroom bldg. with steel joists, steel frame and wood shops bldg.; steel, concrete wood gymnasium and locker room bldg. $475,000. Plans deposit $25. Bamberger & Reid, 109 Stevenson St., San Francisco, archts. CD 2/11/48.

Fla., Fort Lauderdale—SCHOOL—Broward Co., Washington Park School, 18 classrooms, cafeteria, administrative bldg., etc., Gamble, Pownall & Gilroy, 1407 E. Las Olas Blvd., archts.

●Calif., Sacramento—HOSPITAL—Sacramento Co., Courthouse, 4 story, rein.-con., steel hospital addn., $1,000,000. Plans deposit $100. Extended date. Geo. Sellon, 1st **State** Life Bldg., Sacramento, archt. CD 11/9

†N. M., Los Alamos—RADIOGRAPHIC RESEARCH—U. S. Atomic Energy Comn., Los Alamos, 2 story, 42x195 ft., rein.-con. radiographic research, Inv. No. 291-50-36. $350,000-$400,000. Plans deposit $50.

N. D., Mandan—DORMITORY—Bd. Admin., Bismarck, boys dormitory at State Training School. $250,000. Ritterbush Bros., Bismarck, archt. CD 4/6.

LOW BIDDERS

●Md., Baltimore—SCHOOL—City, City Hall, Nov. 23, 2 story, brick, steel, concrete, O'Donnell Heights School, Graceland Park, Gusryan and O'Donnell Sts., from Jos. E. Hughes & Co., Inc., 511 N. Charles St., **$1,060,935.** Est. $1,000,000. Faisant & Kookan, 2017 Maryland Ave., Zone 18, structural engrs., George & Hartman, 105 E. Pleasant St., Zone 2 mech. engr. CD 10/24

●†N. M., Los Alamos—PLANT—U. S. Atomic Energy Comn., Los Alamos, Nov. 22, electric and steam plant, TA-3, Inv. No. 291-50-20, from Thos. Bryan & Assoc., M & M Bldg., Houston, Tex., **$1,665,236.** Est. $750,000-$1,250,-000. CD 11/11.

N. C., Winston-Salem—SCHOOL—Bd. Educ., Forsyth Co., R. M. Brimley, supt., Winston-Salem, Nov. 23, Carver School, from Fowler Jones Constr. Co., Reynolds Office Bldg., **$929,700.** CD 10/19.

S. C., Greenville — STEAM PLANT, etc. — Greenville General Hospital, Greenville, cancelled bids to have been opened Nov. 30, steam plant and laundry. Project indefinitely postponed. CD 11/18.

CONTRACTS AWARDED

●†Idaho, Arco—TESTING REACTOR—U. S. Atomic Energy Comn., Idaho Falls, steel, brick, concrete reactor testing bldg., near here, to Bechtel Corp., 220 Montgomery St., San Francisco, Calif., **$2,500,000,** Austin Co., 16112 Euclid St., Cleveland, O., engr.-archt. CD 10/7.

●W. Va., Charleston — OFFICE — State Office Bldg. Comn., State Capitol Bldg., general contract state office, to J. A. Jones Constr. Co., Inc., 209 W. 4 St., Charlotte, N. C., **$2,271,610.** Bids 11/15. CD 11/23, under LB.

COMMERCIAL BUILDINGS

BIDS ASKED

December

Minn., St. Paul—SCHOOL—St. Luke's R. C. Church, Msgr. Cullinan, 22 N. Lexington Parkway, parochial school and altering grade school, Portland Ave. and Lexington Parkway, $500,000. Slifer & Cone, 442 Endicott Bldg., archts. CD 11/18/48.

December 19

Ill., Chicago—STORE—J. C. Penney Co., Inc., 112 Place and S. Michigan Ave., Zone 28, 3 story, bsmnt., 80x116 ft. steel, brick, concrete store, S. Michigan Ave. and 112 St., $500,000.

December 21

Wash., Bellevue—HOUSES—Veterans Mutual Bldg. Assn., c/o Chiarelli & Kirk, archts., 2 and Cherry Bldg., Seattle, Zone 4, 54 frame houses in Norwood Village, Approx. **$250,000.**

CONTRACTS AWARDED

●Del., Claymont—APARTMENT DEVELOPMENT—Brook View Apartments, c/o contractor, apartment development Phila. Pike, to Anthony P. Miller Inc., 3333 Arctic Ave., Atlantic City, N. J. **$4,000,000.** W. R. Morton Keast, 1201 Chestnut St., Phila., Pa., archt.

●Ill., Chicago—APARTMENTS—Owner, c/o L. S. Hirschfield, archt., 1120 N. LaSalle St., general contract 16 story, brick, rein.-con., co-operative apartments, Bank and Astor Sts., to Peter Hamlin Co., 9 S. Clinton St., **$1,750,-000.** CD 3/14/47.

●La., New Orleans—OFFICE—Pan-American Life Insurance Co., c/o contractor, office bldg., to George J. Glover Co., Inc., Whitney Bldg., over **$1,000,000.** CD 11/17.

●Md., Baltimore — APARTMENTS — Marlyn Manor, Inc., A. Stark, 208 E. Lexington St., Zone 2, 2 story, bsmnt., 200 unit, brick, garden type apartments, Winton Court, Chandler Court, Parkview, Bowers and Chandler Aves., separate contracts, **$1,500,000.** Hal A. Miller, 2118 Maryland Ave., Zone 18, archt. A. E. Pohmer, 20 E. Lexington St., Zone 2, civil engr.

●N. Y., New York—APARTMENT—11 Riverside Drive Corp., c/o Sylvan Bien, archt., 565 5 Ave., 16 story apartment, on block bounded by Riverside Dr., West End Ave., W. 73 and W. 74 Sts. Owner builds. **$8,000,000.** CD 8/24.

●O., Cincinnati—RESIDENCES—The Dillons, 4935 Wicklow Ave., brick, 1 and 1½ story, bsmnt., residences, Sycamore Twp., own forces. **$7,200,000.** W. W. Cordes & Fred Pressler, 4935 Paddock Rd., archts.

●O., Cleveland Heights—HOMES—Prentiss Park Development, Swetland Bldg., Cleveland, 104 one story brick, stone homes, Pinetree, Yellowstone and Glenallen Drives, separate contracts. **$2,500,000.** Milo Holdstein, 628 Truman Bldg., Cleveland, archt.

●O., Wyoming (Br. Cincinnati)—RESIDENCES—Martin L. Holeman, 2434 Langdon Farm Rd., Cincinnati, one hundred thirty-six 1½ story concrete bsmnt., brick residences, separate contracts. **$2,040,000.** Lee P. Firth, 3040 Madison Rd., Cincinnati, archt.

●Pa., Ambler—RESIDENCES—Square Circle Constr. Co., 8 E. Glenside Rd., Glenside, residential development, Tennis Ave., separate contracts, **$1,000,000.**

●Pa., Westmont—APARTMENTS—Acme Eng-Co., 481 S. Atlantic St., Pittsburgh, 8 two story, bsmnt, 40x133 ft. brick and tile backup apartments, own forces. Approx. **$1,500,000.** Phillip Friedman, 121 S. Negley Ave., Pittsburgh, archt.

●S. C., Clemson—HOUSING—Clemson College, Clemson, housing development for faculty and students, to Daniel Constr. Co., Greenville. Approx. **$2,500,000.**

●Tex., Snyder — HOTEL, etc. — Park Terrace Plaza, Snyder, 9 story, bsmnt., hotel and office to Avery-Stanford Co., Midland, Approx. **$2,100,000.** CD 12/1.

●Tex., San Antonio—DWELLINGS—Richardson Development Corp., and Blanco Road Imprvt. Corp., Gunter Bldg., 150 dwellings near here, own forces. Approx. **$1,175,000.** C. Rinard, c/o E. Reed, 350 Primrose St., archt. R. Andricks, Milam Bldg., engr. CD 11/7.

INDUSTRIAL BUILDINGS

BIDS ASKED

December 12

B. C., Vancouver — PLANT — McCarter & Nairne, archts., 1930 Marine Bldg., 4 story, 85x140 ft., rein.-con. cold storage plant addn., for Vancouver Ice & Cold Storage Ltd., 97 Gore Ave. Approx. $300,000. Plans deposit $50.

About December 15

Ala., Center—WAREHOUSE, etc.—Cherokee Electric Co-operative, Center, warehouse and office, $80,000. Richard Boinest, 1021 Montvue Ave., Anniston, archt.

December 16

Ga., Americus—PLANT—Manhattan Shirt Co., 207 River St., Paterson, N. J., mfg. plant. Approx. $100,000.

SOON LETS CONTRACT

●Mich., Pontiac—ENGINEERING, etc.—Pontiac Div. General Motors Corp., soon lets contract 2 story, 320x400 ft., rein.-con., structural steel, masonry engineering and dynamometor bldgs. $2,500,000. Plans deposit $50. Albert, Kahn Rssoc. Archts. & Engineers, Inc., 345 New Center Bldg., Detroit, archt. CD 2/24/47.

LOW BIDDERS

●Tex., Houston—PIPE MILL—Consolidated Western Steel Corp., c/o U. S. Steel Corp., 2087 E. Slauson St., Los Angeles, Calif., project definitely abandoned 100,000 ton capacity electric-welded steel pipe mill, **$4,000,000;** water, sewer, gas, electric systems, **$350,000;** site preparation, dirt work, drainage, concrete fdns., **$1,000,000.** To build at Orange. CD 10/19.

CONTRACTS AWARDED

●Pa., Pittsburgh—SERVICE—H. J. Heinz Co., Progress St., rebuilding service bldg., etc., to George A. Fuller Co., 597 Madison Ave., New York, N. Y. Approx. **$2,000,000.** Bids 11/1. CD 10/29.

●Ont., Toronto — PLANT — International Business Machines Co., Ltd., 36 King St. E., brick, tile glass block, structural steel plant, concrete fdns. and floors, air-conditioning, Don Mills Rd., North York Twp., to A. W. Robertson, Ltd., 57 Bloor St. W., Toronto. Approx. **$1,000,000.** C. G. MacLean, 2700 Dufferin St., archt. Shepherd & Powell, 57 Bloor St. W., engrs.

●Ont., Toronto — PLANT — Pilkington Glass Mfg. Co., Ltd., 19 Mercer St., plate glass plant in east end of city, to A. W. Robertson, Ltd., 57 Bloor St. W. Approx.**$3,000,000.** Allward & Gouinlock, 57 Bloor St. W., archts. CD 11/29.

UNCLASSIFIED

BIDS ASKED

December 12

Md., Baltimore — TROTTING TRACK — Baltimore Trotting Races Inc., 210 E. Lexington St., Zone 2, Contr. 2, trotting track, grandstand, Club house, jockey quarters, stables, barns, near here, Tyler, Ketcham & Myers, 513 Park Ave., Zone 1, consult. archts. Egli & Gompf, 1019 N. Calvert St., Zone 2, mech. engrs., CD 10/10.

N. Y., La Grange—PARK DEVELOPMENT —Taconic State Park Comn., Statsburg, park development. Plans deposit $15. CD 11/23/45, under New York.

December 13

N. Y., Oyster Bay—BATHHOUSE, etc.—Bd. Supervs., Town Hall, bathhouse, comfort station, etc., Tobay Beach. Plans deposit $10. Philip Goodwin, 32 E. 57 St., New York, Zone 22, archt.

December 14

Md., Baltimore—STADIUM—City, Bureau Bldg. Constr., 410 Municipal Bldg., (2nd portion of proj.) Babe Ruth Stadium, E. 33 St., incl. grading and constr. of Lower Stands. Sections L. E. to S. E. and L. W. to S. W., $725,000. Plans deposit $100, Hall Border & Donaldson, 2111 N. Charles St., archts., Faisant & Kookan, 2017 Maryland Ave., consult. engrs., Henry Adams, Inc., 2315 N. Charles St., mech. engr. CD 12/4/47.

N. Y., Whitestone—PARK IMPRVS.—Comr. Parks at office Dpt. of Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., New York, Zone 21, general contract, electrical work, plumbing, heating and ventilating, and installing lockers for completion of golf course and adjacent area near Cross Island Parkway and 202 St., Clearview Park, Queens Boro., Contr. Q-1-149. Plans deposit $20 for general contract, $5 each others. Extended date. CD 11/22.

Okla., Tulsa—OIL CIRCUIT BREAKERS, TRANSFORMERS, etc.—Southwestern Power Admin., P. O. Drawer 1619, Zone 1, oil circuit breakers, transformers, operating switches and regulators for various substations. $225,-000. Plans deposit $15.

December 20

Calif., San Francisco—MUSEUM—Recreation Comn. of City and San Francisco Co., 61 Grove St., rein.-con. junior museum bldg. Approx. $250,000. Plans deposit $50. W. G. Merchant, 57 Post St., archt. CD 11/13/47.

Proposal Advertisements see pp. 116 to 118 & 133

OFFICIAL PROPOSALS

OFFICIAL PROPOSALS

Bids: December 1, 1949 (455)

State Road Work

Sealed proposals will be received by the State Highway Department at its offices, Dover, Delaware, until 2:00 P.M., E.S.T., December 21, 1949 and at that time and place publicly opened for contracts involving the following approximate quantities:

CONTRACT 791
Federal Aid Project F-166 (7)
WILMINGTON AVE., ELSMERE
New Castle County
R.C.C. Divided Highway
0.407 Miles

15,000	C. Y. Excavation
475	C. Y. Structure Excavation
1,000	C. Y. B. P. Stripping
9,000	C. Y. Selected Borrow
35	T. Bituminous Concrete
3,400	C. Y. C. C. Pavement
365	C. Y. C. C. Masonry
32,100	Lbs. Reinforcing Steel
1,280	Sqs. Wire Mesh Reinforcement
925	L. F. 15" R. C. Pipe
750	L. F. 18" R. C. Pipe
50	L. F. 24" R. C. Pipe
550	L. F. 8" C. C. Curb
3,050	L. F. Int. Curb & Gutter
525	L. F. 8" C. C. Parkway Curb
3,150	L. F. 12" C. C. Parkway Curb
16,500	S. F. 4" C. C. Sidewalk
1,600	S. F. 6" C. C. Sidewalk
15	Each Catch Basins
5	Each Manholes
9	Each Adjusted Catch Basins
4	Each Adjusted Manholes
10,000	Lb. Castings
11,000	S. Y. Topsoil
2.1	A. Seeding
1,000	S. Y. Sodding
75	L. F. C. C. Inlet Curb
5	T. Flake Calcium Chloride
2,800	S. Y. Removal Present Pavement
485	Bags Extra Cement
15	L. F. 6" Vit. Clay Pipe

CONTRACT 1009
Federal Aid Project F-1 (6)
Philadelphia Pike
(Claymont-Pennsylvania Line)
New Castle County
C.C. Widening & Hot Mix
Resurface
1.642 Miles

11,500	C. Y. Excavation
70	C. Y. Excavation for Structures
4,150	C. Y. C. Base (Cr. Cont.)
2,000	C. Y. Borrow
120	T. Bituminous Concrete
10,000	T. Hot Mix Asphalt Surface
2,880	C. Y. C. C. Pavement
1,600	S. Y. Patching
115	C. Y. C. C. Masonry
8,865	lb. Reinforcing Steel
840	Sqs. Wire Mesh Reinforcement
138	L. F. 12" R. C. Pipe
1,450	L. F. 15" R. C. Pipe
30	L. F. 18" R. C. Pipe
50	L. F. 4" Vit. Clay Pipe
150	L. F. 15" Vit. Clay Pipe
50	L. F. 18" Vit. Clay Pipe
24	L. F. 24" Vit. Clay Pipe
17,160	L. F. C. C. Curb
460	L. F. C. C. Inlet Curb
65,000	S. F. 4" C. C. Sidewalk
5,400	S. F. 6" C. C. Sidewalk
81	Each Type "A" Catch Basins
5	Each Type "B" Catch Basins
44	Each Adjusted Catch Basins
6	Each Adjusted Man Holes
42,000	Lb. Castings
3,200	S. Y. Topsoil
1.0	A. Seeding

OFFICIAL PROPOSALS

1,500	S. Y. Sodding
17,200	T. Quarry Screenings
17,000	S. Y. Removal Present Pavement
4,100	Bags Extra Cement
65	T. Calcium Chloride
240	T. Sand
230	L. F. Special Guard Rail
610	L. F. Removal Present S. W. Railing
360	L. F. Reset Present S. W. Railing
160	L. F. Furnish & Set New S. W. Railing
5,000	S. F. Cement Mortar Protection
	L. S. Reset Structural Steel

CONTRACT 1034
HAY ROAD EXTENSION
New Castle County
20' C. C. Pavement
0.138 Miles

1,400	C. Y. Excavation
100	C. Y. B. P. Stripping
800	C. Y. Borrow
430	C. Y. C. C. Pavement
11	S. Y. C. C. Gutter
88	L. F. 15" R. C. Pipe
138	L. F. 24" R. C. Pipe
120	L. F. 24" Cast Iron Pipe
120	L. F. Wood Shoulder Curb
120	L. F. Wire Rope Guard Rail
4	Each End Post Attachments
2	Each Catch Basins
1,000	Lb. Castings
1,600	T. Quarry Screenings

CONTRACT 1060
Federal Aid Project S-105 (1)
BARLEY MILL BRIDGE
& APPROACHES
New Castle County
Steel & R.C.C. Structure &
Surface Treated Road
0.188 Miles

0.5	A. Clearing
150	C. Y. Excavation
50	C. Y. Rock Excavation
431	C. Y. Excavation for Structures
50	C. Y. Borrow Pit Stripping
9,000	C. Y. Borrow
500	C. Y. Selected Borrow
255	C. Y. Cement Concrete Masonry
27,790	Lb. Reinforcing Steel
66,140	Lb. Structural Steel
48	L. F. 12" R. C. Pipe
52	L. F. 18" R. C. Pipe
120	L. F. Wood Shoulder Curb
120	L. F. Wire Rope Guard Fence
8	Each End Post Attachments
225	L. F. Flexible Guard Rail
1,290	Gal. R. C. 1 Asphalt
1,290	Gal. R. C. 3 Asphalt
55	T. Slag Chips
55	T. Crushed Chips

Contracts 791, 1009 and 1060 are Federal Aid Projects and will be governed by the provisions of the Federal Aid Highway Act as amended.

The Employment Agency for these contracts shall be the Delaware State Employment Service whose offices are located at 601 Shipley Street, Wilmington, Delaware.

Attention is called to the Special Provisions in the proposal, specifications and contract agreement.

Performance of contract shall commence within ten (10) days after execution of the contract and be completed as specified.

Monthly payments will be made for ninety (90) per cent of the construction completed each month.

Bidders must submit proposals upon forms provided by the Department.

Each proposal must be accompanied by a surety bond, certified check, or money to the amount of at least ten (10) per centum of the total amount of the proposal.

The envelope containing the proposal must be marked "Proposal for the construction of State Highway Contract No. ....."

The right is reserved to reject any or all bids.

The Contract will be awarded or rejected within twenty (20) days from the date of opening proposals.

Complete sets of plans and specifications may be obtained after December 12, 1949 upon receipt of five dollars ($5.00) for each contract, which amount will not be refunded.

Make checks payable to the State Highway Department.

STATE HIGHWAY DEPT.
By: J Gordon Smith, Chairman
W. A. McWilliams, Chief Engineer
Dover, Delaware
November 23 1949

OFFICIAL PROPOSALS

Bids: January 16, 1949 (449)

City Disposal Plant

'The City of Warsaw will receive bids for the construction of a city disposal plant (activated sludge—diffused air) January 16th, at 8 p.m., Central Standard Time. Plans available at the office of D. H. Lessig, Engineers, 110½ East Center Street, Warsaw, Indiana. A deposit of Twenty-five Dollars ($25.00) is required for each set of plans, which amount will be refunded at the time of letting if the plans are returned in good condition.'

U. S. Government

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

NOTICE IS HEREBY GIVEN that sealed bids will be received at Casper, Wyoming, until 10 a.m., Mountain Standard Time, January 5, 1950, and then publicly opened for furnishing labor and materials and performing all work for erecting an elevator walkway on the face of Pathfinder Dam near Alcova, Wyoming, North Platte Project, Wyoming-Nebraska.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: A. A. Batson, Regional Director, New Customhouse, Denver, Colorado, and I. J. Matthews, District Manager, Casper, Wyoming. No charge to prospective bidders for copies of the specifications and drawings; to others $0.50 per copy not returnable. (458)

(Continued on page 117)

OFFICIAL PROPOSAL

RATE: $1.00 per line (or fraction) per insertion.

CLOSING DATE: 12:00 p.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

OFFICIAL PROPOSALS
(Continued from page 116)

Bids: December 22, 1949 (453)

Approach Paving of Service Stations

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 4 PARKWAY, SECTIONS 4G & 6E
For Approach paving at Service Station Sites on Route 4 Parkway, Sections 4G and 6E, in Woodbridge and Clark Townships, Middlesex and Union Counties. Length 0.645 miles.

Estimated:
31,000 cu. yds. Roadway Excavation — Earth
8,800 cu. yds. Borrow Excavation
23,900 sq. yds. 4" Macadam Base Course
23,900 sq. yds. 3" Pen. Macadam Inter. Course
1,924 tons 1½" Pavement, Type FA-BC-1
1,600 sq. yds. 8" Plain Conc. Pavement Surface
262 Trees
1,109 Shrubs
1,432 Vines

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, New Jersey, on Thursday, December 22, 1949, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: Spencer Miller, Jr.
State Highway Commissioner

Bids: December 29, 1949 (456)

Timber Walkway, Navy Wharf and Pier

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
CONTRACT PN-26

Sealed proposals for the rehabilitation of a wharf and pier and the construction of a timber walkway at Port Newark will be received in the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, N. Y., until 2:00 P. M. Thursday, December 29, and thereafter in the Auditorium of the Authority at the same address until 2:30 P. M. on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer, and copies will be furnished upon deposit of $25.00 per set. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman,
Chairman.

New York, December 8, 1949.

OFFICIAL PROPOSALS

Bids: December 28, 1949 (450)

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Chapter 63 Laws of 1936, as amended, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on Wednesday, December 21, 1949 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract containing 1 to 15 sheets is $5.00; 16 to 30 sheets, $10.00; over 30 sheets, $20.00. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. Nickerson, Dist. Engr., 353 Broadway, Albany, N. Y.				
Albany	FGRC 49-126	Gr. Sep. of The N. Y. C. R.R. with New Scotland-Wolf Hill, S. H. 366 Proj. FG 392(8)	0.44	9" Cem. Conc. Pavt. 24' Wide I-R. R. Sep. Beam Br. 64'-9"	$20,000 Plans $5	$362,000.00
Rensselaer	FASS 49-30	Wynantanock-Garfield Proj. S-326(1)	0.58	Rob Gravel Bit. Treat. 87' 3" Alpha I-Beam Alpha $55.16	$5,500 Plans $5	$100,000.00
		DISTRICT No. 2				
		L. Ketchum, Dist. Engr., 109 No. Genesee St., Utica, N. Y.				
Herkimer	RC 49-90	Herkimer Vill.: State St., S. H. 48-11	0.95	Roadside Development	$700 Plans $5	$12,000.00
Oneida		Williams Br. over Forestport Feeder	0.07	Rob Gravel 41'-11" I-Beam Brodge	$1,200 Plans $5	$21,611.50
		DISTRICT No. 4				
		A. R. Mulligan, Dist. Engr., Barge Canal Term., Rochester, N. Y.				
Monroe	PSC 4763 & PSC 5938	Elim. of The N. Y. C. R. R. & The B. & O. R. R. with Hague St., Ames St., Colvin St., Child St. & York St., in the City of Rochester	0.59	Asp. Conc. Opt. 2-46' Sp. I-Beam Brs. 3' 9" x 10' Ped. Subways	$93,000 Plans $20	$1,554,000.00
		DISTRICT No. 5				
		C. R. Waters, Dist. Engr., 65 Court St., Buffalo, New York				
Erie	FAC NT49-1	City of Buffalo: Niagara Thruway (Court St to Porter Ave.) Proj. U865(5)	1.05	9" Cem. Conc. Pvt. 2 @ 37' Wide=0.86 Mi. Asp. Conc. Type 2-A =0.17 Mi. Misc. Work =0.02 Mi.	$30,000 Plans $5	$514,000.00
		DISTRICT No. 9				
		F. W. Donovan, Dist. Engr., 71 Frederick St., Binghamton, N. Y.				
Sullivan	FGRC 49-129	Sep. of Grs. of the N. Y. O. & W. R. R. with Bloomingburg-Monticello, Pt. 1, S. H. 5510, 5510-A Proj. FG 495(4)	0.56	9" Cem. Conc. Pavt. 36' & Var. Wide=0.40 Mi. Misc. Work=0.16 Mi. 47' Span I-Beam	$21,000 Plans $5	$385,000.00

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY,
Supt. of Public Works

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2845) will be received by Bureau of Reclamation, Cody, Wyoming, December 29, 1949, and then publicly opened for furnishing labor and materials and performing all work for the construction of earthwork, tunnel, structures, and surfacing, Shoshone Power Plant access road, station 0+00 to station 13+74.73. The work is situated on the Shoshone River approximately 7 miles west of Cody in Park County, Wyoming. Principal items are approximately: 5,000 cu. yds. of excavation; 130 cu. yds. of concrete; 500 cu. yds. of gravel or crushed rock surfacing; furnishing and placing 20,000 pounds of reinforcement bars; and other work. Time allowed for completion will be 240 days. For particulars, address Bureau of Reclamation, Cody, Wyoming; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(451)

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2853) will be received by Bureau of Reclamation, Denver, Colorado, December 22, 1949, and then publicly opened for furnishing 254,000 lin. ft. standard concrete irrigation pipe from 10 inches to 15 inches, inclusive; and 342,000 lin. ft. reinforced-concrete pipe for 25- to 50-foot heads from 12 inches to 72 inches, inclusive, for Ivanhoe Irrigation District; Lindmore Irrigation District, Unit 3; and Southern San Joaquin Municipal Utility District, Unit 3, Central Valley Project, California. Delivery is desired: 50% in 180 days and total in 300 days. For particulars, address Bureau of Reclamation, Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(457)

ADDITIONAL OFFICIAL PROPOSALS APPEARING ON PAGES 116, 118, AND 133

OFFICIAL PROPOSALS enable you to get the greatest variety of bids —and so to get the lowest prices consistent with the best work.

U. S. Government
(Continued from page 117)

U. S. ARMY, CORPS OF ENGINEERS, NEW ENGLAND DIVISION, Army Base, Boston 10, Mass. Inv. No. Eng-19-016-50-5—Sealed bids will be received at this office until 2:00 P. M., January 4, 1950, and then publicly opened for Construction of a Veterans Administration Hospital, 500 bed General Medical and 400 bed Tuberculosis, West Haven, Connecticut, in accordance with specifications and plans, copies of which are available at this office. Deposit required of $125.00 per set for blueprints, $40.00 for half-size reproductions, and $15.00 for specifications, in form of certified check or postal money order payable to "Treasurer of the United States". (435)

BIDS FOR ALTERING DREDGES—Memphis District, Corps of Engineers, P. O. Box 97, Memphis 1, Tenn. Sealed bids will be received here until 2:00 p.m., C.S.T., 15 December 1949, and then publicly opened, for altering and repairing U. S. Dredges Potter and Ockerson. Information on request. (443)

OFFICIAL PROPOSALS

Bids: December 22, 1949 (444)

Northeast Tunnel

CONTRACT SECTIONS 2, 3, 4 AND 5 FOR THE
DEPARTMENT OF WATER SUPPLY
CITY OF DETROIT, MICHIGAN
CONTRACTS

DWS—29 A
DWS—29 B
DWS—29 C
DWS—29 D

Sealed proposals for the construction of Contract Sections 2, 3, 4 and 5 of the Northeast Tunnel will be received by the Board of Water Commissioners of the City of Detroit, at Room 506, Water Board Building, 735 Randolph Street, Detroit 26, Michigan, until 10:00 A. M. Eastern Standard Time, December 22, 1949, at which time and place they will be opened and read aloud. Proposals shall be addressed to the Board of Water Commissioners of the City of Detroit, and endorsed "Proposal for Contract No. DWS-29". Any proposal received after the time referred to above will be returned to the bidder unopened.

The work consists of the construction of four sections of the Northeast Tunnel, which will be 10 feet in inside diameter with plain concrete or brick masonry lining. Proposals may be submitted for any single section, for any number of sections in any combination, or for all sections. The approximate length of each section is as follows:

Section 2, 6,300 feet. Section 4, 5,000 feet.
Section 3, 4,500 feet. Section 5, 4,973 feet.

The Contract Documents, including Notice to Bidders, Form of Proposal and Contract, Plans and Specifications, may be examined during business hours at the office of the Department of Water Supply, Room 706, Water Board Building, Detroit, Michigan, and may be obtained upon making a deposit of Twenty-Five Dollars ($25.00) per set of complete Plans and Specifications which includes all four Sections, which sum will be refunded upon the return of the complete Contract Documents in good condition within thirty days after the bid date.

Each proposal shall be accompanied by a certified check or a satisfactory bidder's bond in an amount not less than five per cent (5%) of the total lump sum price bid, drawn payable to the City of Detroit, Board of Water Commissioners, as security for the acceptance of the Contract or Contracts.

No proposal may be withdrawn for at least 60 days after the scheduled closing time for receipt of bids.

The Board of Water Commissioners reserves the right to waive any informality in any bid and to accept or reject any or all bids, should it deem it to be for the best interests of the City of Detroit so to do.

CITY OF DETROIT
BOARD OF WATER COMMISSIONERS
Carl J. Schoeninger, President
Edward C. Roney, Vice President
R. K. Williams
Oscar Wagner
L. G. Lenhardt, Superintendent,
General Manager and Chief Engineer
E. H. Bauer,
Acting Secretary

OFFICIAL PROPOSALS

Bids: December 2, 1949 (445)

Furnishing and Delivering Curb Cock Boxes, Roadway Boxes and Curb Box Extensions

WASHINGTON SUBURBAN SANITARY COMMISSION

Sealed proposals for furnishing and delivering one-thousand-five-hundred (1,500) curb cock boxes, two-hundred (200) roadway boxes, two-hundred (200) curb box extensions 12" long and two-hundred (200) curb box extensions 20" long, will be received in the office of the Purchasing Agent of the Washington Suburban Sanitary Commission, Hamilton Street, Hyattsville, Maryland, until 10:30 A. M. Eastern Standard Time, Monday December 12th, 1949 at which time and place they will be publicly opened and read.

Specifications may be obtained from W. R. Douglas, Purchasing Agent of the Commission, Hyattsville, Maryland.

Dwight B. Galt (Chairman)
Leland G. Worthington
Warren Browning
Commissioners

Bids: January 9, 1949 (430)

Concrete Dam and Power Plant

Puerto Rico Aqueduct and Sewer Authority
Santurce, Puerto Rico

Sealed bids will be received by the Puerto Rico Aqueduct and Sewer Authority until 3 o'clock P.M., January 9, 1950, at the Office of the Authority in Santurce, Puerto Rico.

Copies of the plans and specifications may be examined and obtained at the office of the Puerto Rico Aqueduct and Sewer Authority, Santurce, Puerto Rico or at the offices of Buck Seifert and Jost, Consulting Engineers, 112 East 19th Street, New York City upon deposit of Twenty-Five ($25.00) Dollars, which sum will be refunded upon return of the plans and specifications in good condition within twenty (20) days after the date on which bids are received.

The work to be performed is divided into three (3) sections. The principal items of work are:

SECTION F The construction of a gravity type concrete dam about 210 meters long with a maximum height to spillway crest of about 18 meters together with concrete power plant structure, pumping station substructure, tail race, and installing Tainter gates.

SECTION G Furnishing C.I.F. San Juan, Puerto Rico 8 Tainter gates, each 39 feet wide by 30 feet high, with hoisting mechanisms and electrical control equipment.

SECTION H Furnishing C.I.F. San Juan, Puerto Rico 2 hydraulic turbines and 2—1,250 KVA electric generators.

Each proposal must be accompanied by a certified check or bid bond equal to 5% of the proposal. The certified check will be retained to pay for any damage or loss to the Authority, or the liability bond will accrue in case the successful bidder shall neglect or refuse to enter into a contract in accordance with his proposal.

The Authority reserves the right to consider bids for fifteen (15) days after their receipt before awarding any contract and the right is reserved to waive any informalities, to accept any bid or to reject any or all of them.

PUERTO RICO AQUEDUCT AND
SEWER AUTHORITY
By SERGIA CUEVAS,
EXECUTIVE DIRECTOR
Buck, Seifert and Jost
Consulting Engineers

Bids: December 15, 1949 (436)

Water Transmission Main

SEALED PROPOSALS

Sealed proposals for furnishing all labor and materials for the construction of a water transmission main, a distance of approximately 208,000 lineal feet from the water purification plant at Chester-Octoraro Lake, to the Chester-Harrison Hill Reservoir in Lancaster, Chester and Delaware Counties, Pennsylvania; will be received by the Executive Manager of the Chester Municipal Authority, at the Authority Office, 5th & Welsh Streets, Chester, Pennsylvania, up to 2:00 o'clock P.M., Eastern Standard Time, Thursday, December 15, 1949, at which time and place the proposals will be publicly opened and read aloud.

OFFICIAL PROPOSALS

It is the intention to take bids for furnishing and installing the transmission main under two alternate plans of combinations of pipe sizes as outlined in the contracts listed below.

Proposals may be submitted for furnishing and installing the entire transmission main under Contract No. 15. Bids for furnishing and installing the transmission main in four sectional contracts will be taken as an alternate to the bid for the furnishing and installing the entire transmission main. These alternate bids are represented by Contract Nos. 16, 17, 18 and 19.

Sub-alternate bids under Contract Nos. 15, 16, 17, 18 and 19 for furnishing pipe only, and for installation of pipe only, may also be submitted.

ALTERNATE PLAN NO. 1—
(COMBINATION 42", 39", 36", 30" and 24" DIAMETER PIPE)

Contract No. 15—Furnishing and installing approximately 208,000 lineal feet of 42", 39", 36", 30" and 24" diameter pipe, fittings and appurtenances.
Contract No. 16—Furnishing and installing approximately 26,000 lineal feet of 42" diameter pipe, fittings and appurtenances.
Contract No. 17—Furnishing and installing approximately 65,000 lineal feet of 39" diameter pipe, fittings and appurtenances.
Contract No. 18—Furnishing and installing approximately 65,000 lineal feet of 39" diameter pipe, fittings and appurtenances.
Contract No. 19—Furnishing and installing approximately 52,000 lineal feet of 36", 30" and 24" diameter pipe, fittings and appurtenances.

ALTERNATE PLAN NO. 2—
(COMBINATION 42", 48", 42", 36", 30" and 24" DIAMETER PIPE)

Contract No. 15—Furnishing and installing approximately 208,000 lineal feet of 42", 48", 42", 36", 30" and 24" diameter pipe, fittings and appurtenances.
Contract No. 16—Furnishing and installing approximately 26,000 lineal feet of 42" diameter pipe, fittings and appurtenances.
Contract No. 17—Furnishing and installing approximately 65,000 lineal feet of 48" diameter pipe, fittings and appurtenances.
Contract No. 18—Furnishing and installing approximately 65,000 lineal feet of 48" diameter pipe fittings and appurtenances.
Contract No. 19—Furnishing and installing approximately 52,000 lineal feet of 42", 36", 30" and 24" diameter pipe, fittings and appurtenances.

Bids for each contract under both alternate plans may be submitted for the following kinds of pipe:

(a) Reinforced concrete pressure pipe
(b) Coated and lined steel pipe
(c) Cement lined cast iron pipe.

The work will be awarded as a whole to one bidder for the entire transmission main, or to more than one bidder under more than one contract, all as deemed to be in the best interests of the Chester Municipal Authority.

The Chester Municipal Authority reserves the right to select the Alternate Plan under which the work will be awarded, and the kind of pipe to be used under the accepted Alternate Plan.

Information for Bidders, Form of Bid, Specifications and Form of Contract may be examined at the office of the Chester Municipal Authority or at the office of Albright & Friel, Inc., Consulting Engineers, 121 South Broad Street, Philadelphia 7, Pennsylvania, on or after November 25, 1949, and copies thereof may be obtained at either office upon a deposit of $40.00 for each set of documents applying to each contract. If the documents are returned in good condition within five days after the opening of bids, the full amount of the deposit will be returned to each actual bidder for one set of plans and other deposits will be refunded with a deduction of $20.00 to defray the actual cost of reproduction. If the documents are not returned within the time stated, the entire amount of deposit will be forfeited.

A certified check or bid bond drawn to the order of the Chester Municipal Authority equal to five per cent (5%) of the amount of bid must be submitted with the proposal for each contract.

Each proposal must be sealed and marked with the applicable contract numbers, and Alternate Plan numbers, and addressed to the Chester Municipal Authority, c/o Clarence L. Conner, Executive Manager.

The Chester Municipal Authority reserves the right to reject any and/or all bids.

CLARENCE L. CONNER
Executive Manager

November 17, 1949

(Continued on page 133)

SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.20 cents a line, minimum 4 lines. To figure advance payment count 5 average words as a line.
INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.00 a line an insertion.

INFORMATION:
BOX NUMBERS care publication New York, Chicago or San Francisco offices count as 1 line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED—RATE PER INCH:
The advertising rate is $11.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches —to a page. E.N.R.

NEW ADVERTISEMENTS received by December 12th appear in December 22nd issue subject to limitation of space available.

REPLIES (Box. No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

REINFORCING BAR Estimators & Detailers. Location Southeast. Write giving past experience in detail, also salary required. P-1486, Engineering News-Record.

DIRT MOVING and grading foreman for work starting in January. Must know how to handle men and heavy dirt equipment. New Jersey location. Send full resume. P-1501, Engineering News-Record.

ENGINEER—STRUCTURAL or mechanical graduate for designing and estimating structural steel and industrial machinery for well-known New England Fabricating Company. A real opportunity for a young man with practical experience. Salary—open. Please reply giving full resume in strict confidence to P-1498, Engineering News-Record.

SANITARY ENGINEER Wanted—Manufacturer of waste treatment equipment with national acceptance requires skilled sanitary engineer for sales promotion work. Sanitary engineering experience, intimate knowledge of treatment processes essential. Must travel. Submit full particulars. P-1494, Engineering News-Record.

BUILDING INSPECTOR. Prefer graduate with several years experience in building construction for City in Virginia. If interested, advise age, education, experience and salary desired. Address P-1463, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT for heavy construction with know how and practical experience who can handle work from estimating to completion. In reply give full qualifications and salary expected. P-1568, Engineering News-Record.

SUPERVISOR OF Maintenance and Construction-Maintenance Engineer with ME, EE or CE degree, to supervise preventive maintenance program and supervise construction programs in five State mental hospitals, in Central Eastern State. References. P-1571, Engineering News-Record.

ESTIMATOR WANTED

Man qualified to prepare surveys for excavation, concrete, masonry, carpentry, etc. Knowledge of pricing essential and must have the ability to prepare complete estimates for building purposes. Location Boston, Mass.

Apply by letter, giving complete information with regard to age, education, experience, references, minimum starting salary, and date available. All replies will be held strictly confidential.

P-1580, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

WHEN
Answering Advertisements

PLEASE *do not send original letters, certificates or photographs. We cannot be responsible for their return. Please send photostat or carbon copies.*

WANTED
THREE OUTSTANDING MEN

to plan and supervise the work of design engineers on a $38,000,000 Water System Expansion Program; one registered in Civil, one in Mechanical and one in Architectural Engineering. Salary $6430 to $7147 per year. If you have a proven record of success in design and construction of major water pumping and filtration plants, we would welcome your application.

Supervisory Assistants ($5580 to $6297 per year) and Project Engineers, ($4809 to $5287 per year) in Architectural, Civil, Sanitary, Electrical, Mechanical and Structural Engineering will also be needed.

For information, write immediately to

DETROIT CIVIL SERVICE COMMISSION
15th Floor, Water Board Building **Detroit 26, Michigan**

POSITION AVAILABLE

Civil Engineering graduate with minimum 12 years' experience to supervise project engineers on building work, waste disposal and structural design. Scheduling experience also desirable. Location in East with established chemical company. Furnish detailed resume of experience and education, also salary requirements, in reply

P-1420, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

POSITIONS VACANT

WANTED: CONSTRUCTION Superintendent for industrial building, must be experienced and competent to handle all trades, willing to travel in the Midwest, give detailed experience and references, salary desired. P-1590, Engineering News-Record.

EXP. CONTRACT Man—grad. struct. engr. Familiar steel details, erection procedure, negotiation terms of contracts. Should have some purch. exp. and understand const. procedure. Long estab. Co. Location N. Y. Full particulars, salary expected, snapshot. P-1587, Engineering News-Record.

PROMINENT STEEL Plate fabricator seeks exp. designer and estimator. Location midtown N. Y. State full exp., salary. Include photo. P-1586, Engineering News-Record.

DESIGNER DRAUGHTSMAN Wanted for Engineering Department Office of a large pulp and paper mill. Knowledge of structural steel and reinforced concrete preferred. Job consists of layout of process equipment, piping, and material handling, also renovation and improvement of existing buildings and equipment. Experience in above not essential, but applicant should be able to design the structural elements relative to these layouts. Apply Personnel Manager, West Virginia Pulp and Paper Company, Mechanicville, N. Y.

CHIEF DRAFTSMAN — thoroughly experienced Structural Steel Draftsman who is also familiar with miscellaneous iron work. P-1583, Engineering News-Record.

MACHINERY SALESMAN—Excellent opportunity with aggressive company. Complete leading lines except tractors. Must be thoroughly experienced. Boehek Engineering Co., Inc., P. O. Box 12187, Houston, Texas.

WANTED CHIEF Draftsman for 500 ton per month structural fabricating plant. Location Northwestern Illinois. State age, experience, resume and salary expected. P-1575, Engineering News-Record.

(Continued on page 120)

Chief Civil Engineer
WANTED

An excellent opportunity in an established west coast engineering firm for an exceptionally well qualified Graduate Civil Engineer, capable of taking charge of a Civil Department. Must possess comprehensive design experience and thorough knowledge of grading, drainage, roads, railroads, and utility layouts for municipalities.

In addition, applicant must have ability to discuss and develop prospective work with municipal, county and state authorities.

Submit photo with experience record covering above requirements in detail. Replies confidential.

P-1251, Engineering News-Record
621 S. Hope Street, Los Angeles, Calif.

GRADUATE
HYDRAULIC ENGINEER

with a minimum of five years experience with a municipal water system is WANTED to act as first assistant to the superintendent of the Grand Rapids Water and Light Division. Salary—$4,940 per year. Further details and application blanks are available at

CIVIL SERVICE BOARD
304 City Hall, Grand Rapids, Michigan

SALESMAN
WANTED

with established following among general contractors in Metropolitan area. Capable of producing volume business. Lumber experience not essential. Write only, stating age, salary & past connections (confidential).

DORAN LUMBER CORP.
1040 Grand St. **Brooklyn, N. Y.**

SALARIED POSITIONS $3,500—$35,000

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (39 years recognized standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops overtures without initiative on your part. Your identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, Inc., 272 Ellicott Bldg., Buffalo 2, N.Y.

(Continued from page 119)

EMPLOYMENT SERVICE

SALARIED PERSONNEL, $3,000-$25,000. This confidential service, established 1927, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

POSITIONS WANTED

ENGINEERING EXECUTIVE 25 years experience Architectural and Contractural field from planning to completion on industrial, bank, hotel, hospital, office, church and housing projects. Available Jan. 1st. PW-1402, Engineering News-Record.

CIVIL ENGINEER — Executive. Registered P.E., N.Y. Thirty-five years broad experience, about twenty of which in responsible charge field anad office on highways, municipal and general construction in Latin America and Far East. Fluent Spanish. Excellent credentials. Available for foreign assignment. Write or wire Thuman, P. O. Box 126, Merritt Island, Fla.

CONTRACTOR'S ENGINEER, graduate civil, age 30, experience in heavy construction includes estimating, cost engineering, purchasing, and superintendence. Knows costs. Prefer South, other considered. Now employed. Available January 15. Best of reference. PW-1495, Engineering News-Record.

MANAGER—ESTIMATOR—Engineer: 14 yrs. experience, public, industrial, commercial, multiresidential building; and heavy construction on roads, airports, sewers, water lines, reservoirs, marine facilities, railroads, quarry operations. Desires position with gen. contractor, material supplier or mfg., equipment mfr. or dealer. PW-1540, Engineering News-Record.

PROJECT MANAGER or Construction Supt. available immediately. 47, married. 24 years experience supervising construction projects. Industrial, mechanical, commercial, waterfront, water and sewerage systems. Organize and supervise field and office. Sober and reliable. Education: Civil Engineer. PW-1521, Engineering News-Record.

GENERAL OR Assistant Superintendent. Age 48, 28 years experience on concrete bridges, highways, docks, caissons, industrial foundations, concrete dams, southern location preferred but will go any place. 3 years on foreign projects. Available Nov. 15th. PW-1455, Engineering News-Record.

WANTED: CONSTRUCTION superintendent or labor foreman with 30 years experience on all types of roads, black top, concrete, etc.; pipe lines sewer and water, bridges—wants work—available now. PW-1426, Engineering News-Record.

DESIGN ENGINEER, B.S. & M.S. in C.E. New York state license in Professional Engineering and land surveying. Assoc. Mem. ASCE. 24 years experience in major design of bridges, piers, water supply, drainage, sewage disposal, industrial plants, including buildings and utilities. Resourceful; experienced in complex design methods in both consultant and contractor organizations, and accustomed to independent action. Seeking responsible design connection. PW-1450, Engineering News-Record.

GENERAL SUPERINTENDENT — estimator; well experienced in supervision and cost analysis of heavy engineering work. Gardnate C.E., 42, locate anywhere. Available at once for responsible position with a large reputable contracting organization. Heavy engineering construction only. PW-1493, Engineering News-Record.

MECHANICAL ENGINEER—Age 28, experienced in take-off, purchasing, expediting, and field supervision on mechanical and process equipment. Desires position with General Contractor or Mechanical Subcontractor. Midwest location preferred. PW-1555, Engineering News-Record.

CHIEF OF Party—Married, 9 yrs. exp. in construction and property survey. Desires position. Now available. PW-1546, Engineering News-Record.

ESTIMATOR-ENGINEERING Graduate. 20 years experience. Available for a position with a general contractor. PW-1604, Engineering News-Record.

A COURSE OF INSTRUCTION BY MAIL IN

STRUCTURAL ENGINEERING

Thirty-ninth Year

OUR COURSES HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations

- Complete Structural Engineering Course.
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- Architectural Engineering.
- Special Course C (State Board Exams).
- Reinforced Concrete Engineering.
- Structural Steel Designing.

Monthly payments permissible. Information sent without obligation. WRITE TODAY

WILSON ENGINEERING CORPORATION

College House Offices • Harvard Square • Cambridge, Mass., U. S. A.

POSITIONS WANTED

FIELD ENGINEER; Civil Graduate, 31 yrs. age. Have completed three contracts in Venezuela, Arabia, and Mexico on heavy construction. Desire foreign position. PW-1502, Engineering News-Record.

GENERAL CONSTRUCTION, tropical climate, foreign work preferred. Experiences, 15 years carpentry, forms, homes, also shop work. 2½ years railroad building, 2 years erecting ice plants, 2¼ years pile driving. Have worked in British West Indies, Greenland, Asia and South America. Capable of working with or instructing native workers in any part of the world. E. P. Brunese Jr., Pawling, N. Y.

GRADUATE CIVIL Engineer; Married. 5 years experience. 2 years field on industrial construction. 3 years design. Desires position with some responsibility. At present in Cleveland, Ohio. Location immaterial. PW-1589, Engineering News-Record.

STRUCTURAL ENGINEER, Design, estimating, Structural Steel, Fabrication Erection. Thoro knowledge building construction especially ornamental, miscellaneous iron and metal building products. Excellent sales record. PW-1594, Engineering News-Record.

CIVIL ENGINEER Age 31, 5 years experience in road design, building design, and construction supervision. Professional registration. Prefer midwestern location. PW-1585, Engineering News-Record.

WANTED

Used Gurley

Light Mountain Transit with Burt Solar. Must be in A-1 condition. A. H. McLain, La Grande, Oregon.

PATENT ATTORNEY

Patent Practice

before U. S. Patent Office. Validity and infringement investigations and opinions. Booklet and form "Evidence of Conception" forwarded upon request. Lancaster Allwine & Rommell, Registered Patent Attorneys, Suite 454, 815-15th Street, N.W., Washington 5, D. C.

Napoleon once said
"An Army Marches on Its Stomach"

We Have Fed Millions

KANE INDUSTRIAL SERVICE

Industrial Feeding.
Labor Camps.
Labor Camp Equipment.
Free Employment Agencies.
30 Years' Experience in the Housing and Feeding of Men for Satisfied Clients.
Abundant Labor Supply available for Large Projects Anywhere.

VALENTINE B. KANE & ASSOCIATES

1410 State St. New Haven 11, Conn.

LEARN TO ESTIMATE

Today, more than ever before, you must know how to analyze building costs. If you want to become a successful builder, learn how to prepare a correct estimate in a hurry. Get in on the profitable work now available wherever you turn. Your success is assured if your estimates are right; otherwise you are licked before you start.

The Tamblyn System of Estimating will make a real estimator out of you in a few weeks of your spare time. We are so sure that you will want to learn it, that we will send you our complete home study course for ten days examination absolutely free. If you don't think it is the finest thing you ever saw, just return it and it won't cost you a cent. If you like it and want it, send us $8.75 when 10 days are up and $7.50 per month until $30.75 is paid.

This estimating system is based on forty years of actual construction experience. It has been sold all over the world for more than twenty years. Thousands of estimators and contractors swear by it. Our offer isn't hot air and big talk. We don't give you a diploma or a lapel button, but we do teach you down to earth estimating which will bring you profitable business.

Just send your name and address today, and we will mail you the complete course at once for your approval.

TAMBLYN SYSTEM

1115 So. Pearl St., E-361
Denver, Colo.

WANTED

Large engineering firm wishes to acquire several complete plants through purchase of (1) capital stock, (2) assets, (3) machinery and equipment, whole or in part. Personnel retained where possible, strictest confidence.

Box 1206
1474 Broadway New York 18, N. Y.

A National Organization for
FEEDING and HOUSING
employees of Contractors . . .
Railroads . . . Industries . . .
OLYMPIC COMMISSARY CO.
CHICAGO 6, ILL.: 302 S. Canal St.
Phone HA 7-1670
SEATTLE: 316 Second Ave., South
MINNEAPOLIS: 105 Nicollett Ph: Atl 4845.

FOR RENT OR SALE
Super C Tournadozer, C-11's, D Roadsters, Super C Tournapulls, Various 12 to 23 yard Scrapers, Rooters, Sheepsfoot, Bucyrus-Erie Crane E-2, Hydrocranes
DRAVO-DOYLE COMPANY
Pittsburgh 12, Pa.

WANTED

Aggregate Bin—500 tons capacity 4 compartment. 3 Yd. Stationary Mixer — give complete specifications — location —price FOB cars.

W-1444, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

Compressors Wanted
STATIONARY - PORTABLE
LARGE OR SMALL
L. W. BAUER
22 Barnett Street Bloomfield, N. J.

Need 30 ton whirley, steel cable, 105' boom, rental or purchase.
BALTIMORE CONTRACTORS, INC.
711 South CENTRAL AVENUE
BALTIMORE 3, MARYLAND

WANTED
TRAILERS
Gov't Surplus M-19 45 ton Tank Trailers with or w/o dollys.
J. E. Ingram Equipment Co.
P. O. Box 2340 San Antonio, Texas

WANTED
KOEHRING WHEELERS
Models WHD 95 Or Models WHD 125
FARRELL CONTRACTING COMPANY
1607 Wynne Ave., Saint Paul 4, Minnesota
MIDWAY 5859

WANTED
SAUERMAN SLACK LINE CABLE WAY
With bucket not less than One Cubic Yard.
Rental or Purchase
W-1581, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

Need one No. O Vulcan Hammer or equivalent, rental or purchase
BALTIMORE CONTRACTORS, INC.
711 S. CENTRAL AVENUE
BALTIMORE 3, MARYLAND

WANTED
Best 1 to 1¾ CY shovel crane combination, gas or diesel, crawler type machine, that approximately $10,000.00 cash will buy. Will consider damaged machines for our repair at right price.
MACHINERY COMPANY
BOWLING GREEN, KY.

30,000 KW Floating Steam-Electric Power Plant

FOR SALE

Sealed bids will be received by Puerto Rico Water Resources Authority, San Juan, Puerto Rico, until January 3, 1950, at 2:00 P. M. and then publicly opened, for the purchase of the

Floating Power Plant Seapower

This is a complete modern steam electric generating station with a water and fuel rate comparable to modern fixed electric stations. The plant is equipped with a seagoing hull suitable for towing from one location to another.

The Power Plant is contained in a barge 358 feet in length, 50 feet in width, 9 feet draft with sufficient fuel oil storage for seven days operation at full capacity.

One General Electric Turbo Generator (condensing) 30,000 kw capacity at .8 power factor, 3 phase, 60 cycles, 13,800 volts. Equipped and capable of delivering 24,000 kw at .8 power factor, 50 cycles.

One Westinghouse 37,500 kva transformer, 13.8 kv Delta to 63/69 kv Wye or 115/132 kv Wye.

Two Babcock and Wilcox boilers with steam capacity of 170,000 pounds/hour each at an operating pressure of 825 pounds/sq. inch and operating temperature of 900 degrees F. Equipped for burning fuel oil or natural gas.

All data contained hereon are necessarily abbreviated and subject to correction. They are not intended for use as a basis for negotiation. The Authority reserves the right to reject any and all bids, and to waive any informality in bids. For specific data contact, *by air-mail*

PUERTO RICO WATER RESOURCES AUTHORITY
SAN JUAN, PUERTO RICO

Electric Whirley Crane and Storage Bins
NEW 1941
Crane Boom 85'—4 Yard Bucket
5 Steel Bins Total Length 75' x 18'
Distribution conveyors and elevators.
Further information on request.
Benkart Steel & Supply Co.
2017 Preble Ave., Pittsburgh 12, Pa.

RENT OR SALE
GRADALLS
With attachments
Subject to prior commitment
Send full particulars to
FS-1593, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

FOR SALE
1 Koehring 34E Dual DRUM PAVER
Good working condition, immediate delivery.
BOOTH & OLSON, Inc.
Sioux City, Iowa

FOR SALE
12 Athey and Euclid Side Dump 10 to 16 c.y. Crawler Wagons, several nearly new. Various prices.
A. S. WIKSTROM, INC.
Skaneateles, New York

SURVEYING INSTRUMENTS

USED • REBUILT • SALE • RENT • REPAIRING

Our Craftsmen do

INSTRUMENT REPAIR AND OVERHAUL

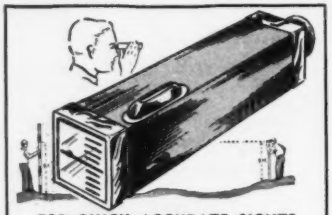
- Complete department—handles all makes.
- Experienced craftsmen do all work.
- Includes thorough overhaul, cleaning, oiling and adjustment.
- Precision work guaranteed.

DAVID WHITE COMPANY
317 W. Court St. • Milwaukee 12, Wis.

INSTRUMENTS FOR RENT

We rent transits and levels on a monthly or yearly basis. Reasonable rates. All instruments are fully guaranteed in first class working order.

DAVID WHITE COMPANY
317 W. Court St. • Milwaukee 12, Wis.



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NEW IMPROVED HAND

SIGHTING LEVELS

For preliminary survey. Ideal for builders, laying drains, roads, foundations, etc. Has thousands of uses. Comes with instructions.

SPECIAL LOW PRICE **$1.85** SHIP. CHG. 15¢ EXTRA

J. JACOB SHANNON & CO.
214 N. 22nd St. PHILA. 3, PA.
THE OLDEST EQUIP. HOUSE IN PHILA.

GURLEY

SURVEYING INSTRUMENTS
NEW • REBUILT

Replace your platinum wire or spider web reticle with the new Gurley *glass* reticle. Metallic filaments deposited on Gurley glass reticles are sharply defined—equally visible against either very bright or dark backgrounds.

Patterns to suit every surveying need.

W. & L. E. GURLEY
Fulton St. Station Plaza, Troy, N. Y.

FOR SALE

ALL MAKES

RE-BUILT REPAIR RENT REAL EXPERTS BUFF

69 Day St., New York

Immediately Delivery

New Army Engineers Type Rubber-Mounted 20-Ton Mobile Crane

—Shovel, backhoe, dragline and clamshell attachments available

FS-1564, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

CIRCULAR GRADUATING

at New Higher Accuracies is Now Available - quickly, Economically - with our new circular graduating engine. *Ask for Prices.*

TRANSITS - LEVELS
All Makes
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GUARANTEED REPAIRS

BRUNSON INSTRUMENT CO., INC.
1405 Walnut St Kansas City 6, Mo.

LASTING **BRUNSON** ACCURACY

FROM STOCK
Brand New & Rebuilt

TRANSITS & LEVELS

Fully equipped modern shop—all makes and models repaired — all work guaranteed — instruments rented

Midwest Representative: W. & L. E. Gurley

NATIONAL BLUE PRINT CO.
Established 1914.
210 S. Canal St. Chicago (6), Ill.

SAFETY HELMETS

Type K. Mine Safety Appliance at a BIG SAVING.
500 Guaranteed NEW.
1000 fully Sanitized.—New sweatbands
500 New Winter head & earlap sets

National Equipment Sales, Inc.
24-16 Jackson Ave., Long Is. City 1, N. Y.

SURVEYING INSTRUMENTS REPAIRED

Send your transits and levels for complete overhauling and reconditioning by experienced factory-trained mechanics. Examination and estimates without cost. Your instrument should be sent express prepaid for a prompt repair estimate.

J. H. WEIL & CO.
1325 CHERRY ST. PHILADELPHIA, PA.
GURLEY REPRESENTATIVES

SPECIALIZED REBUILDING

of surveying and engineering instruments. All makes and models expertly repaired in modern shop. All work guaranteed.

USED REBUILT INSTRUMENTS
for sale or rent

ROY D. HICKERSON
46 JOHNSON AVE. INDIANAPOLIS 19, IND.

EARTH DRILL

1—New BUDA Earth Drill, Model HBJ, Powered with Gasoline Engine, including electric starter. Automotive type transmission provides 4 speeds forward, one in reverse. Hydraulically controlled. Tower lowers to horizontal traveling position.

FURNIVAL MACHINERY CO.
54th & Lancaster Ave., Phila. 31, Pa.

It costs no more
to have your instruments of any make
repaired by the makers of the
WORLD'S FINEST SURVEYING INSTRUMENTS
since 1871

C. L. BERGER & SONS, INC.
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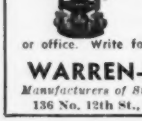
TRANSITS AND LEVELS



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Headquarters for REPAIRS — any make — Factory Service. We will also buy your old instruments or take them in trade.
A complete line of Engineering Instruments and Equipment for field or office. Write for catalog N.R. 912.

WARREN-KNIGHT CO.
Manufacturers of Sterling Transits and Levels
136 No. 12th St., Philadelphia 7, Penna.

FOR SALE

STEAM CRANE

1¼ yd. Thew rigged for pile driving, 150 lb boiler, 50 ft. boom. Good condition.

John D. Sheetz Construction Co.
1334 Sulphur Spring Road
Halethorpe-27, MD.

FOR SALE

Bucyrus-Erie Electric Shovel
Model—1030
GOOD CONDITION

F. W. BRESNEHAN
Purchasing Agent
City Hall Watertown, N. Y.

L.B.SMITH INC.

OFFERS

SHOVELS — CRANES

Lorain 75-B, 1½-yd shovel, crane, hoe, Caterpillar D11000.
Lorain 75A, 1¼-yd shovel or crane, gas or GM diesel.
P&H Model 255A crawler shovel.
Lorain L-41, ¾-yd crawler shovel & crane.
Lorain 40 truck crane, Waukesha engine, mounted on Mack chassis.
Lorain TL-20 self-propelled, 45' crane boom.

SHOVEL ATTACHMENT

Lorain 30A chain crowd, LBS#5142, 16' boom 13'4" stick ½-yd dipper.
Lorain 40 Hi-Lift, 25' boom 19'8" stick LBS #5877, new ¾-yd dipper LBS#7750.
P&H 203A, LBS#2527, 19'6" boom 13' stick ⅝-yd dipper.
Bucyrus-Erie 30B tunnel front 9' stick 1½-yd dipper LBS#3392.

BACKHOE BUCKETS

¾-yd Lorain, 40, LBS#6105, 44" cutting width, teeth, sheave.
27" outside width drop bottom type LBS #1033, good condition.
26" outside width solid bottom type LBS #4377, good condition.

NEW TAGLINES

McCaffrey Model 648 for 1¼ to 2-yd crane.
McCaffrey Model 636 for ¾-yd to 1-yd crane.

SHOVEL DIPPERS

Lorain 41, ¾-yd, LBS #7433, new condition.
New Lima 1-yd, Amsco, LBS#2295.
Bucyrus-Erie 1¼-yd gas air, LBS#3782, fair.
Lorain 75 manganese 1¼-yd, LBS#7233, teeth and bail.
Lorain 75B, 1¼-yd extended lip, 1¾-yd LBS#2260.
Pettibone-Mulliken 2-yd Lorain 82 or 820, manganese, LBS#5361.
Pettibone-Mulliken 2-yd for 3500 Manitowac LBS#5763.

CLAM—DRAG—SCRAPER BUCKETS

AIR COMPRESSORS

Worthington two-stage, water cooled, vertical 250#, 60 CFM, new condition.
Gardner-Denver, 105 foot, with air receiver, hose reel, driven by power take-off and mounted 1941 Ford.
Gardner-Denver air-cooled 105 foot with receiver, V-Belt driven from power take-off and mounted on 1942 Ford chassis with Wood two-yard dump body.
Gardner-Denver 2-stage 160 ft., skid Mtd.
Worthington 210 cubic foot, two-stage air-cooled, on steel wheels, Hercules diesel.
Chicago Pneumatic 210 cubic foot, two-stage, air-cooled, Caterpillar diesel on four rubber tired wheels.
Gardner-Denver 315 cu. ft. two-stage, skid mounted, Murphy four-cylinder diesel.
Pennsylvania 12" x 10" class 3A single cylinder, 355 cubic foot P.D., flat belt driven, 50 HP slip ring motor.

QUARRY EQUIPMENT & BINS

New 18 x 16 double clamshell gates.
20" x 6'6" Belt Type Magnetic Separator.
3018 Cedarapids roller bearing roll crusher, new condition, new warranty, used as demonstrator only.
18 x 36 Farrell deep jaw crusher, with McLanahan 3' x 7' roll type feeder.
10 x 36 Cedarapids, practically new.
10 x 20 Champion #4½ prim. jaw crusher.
10 x 7 Allis Chal. Blake type jaw crusher.
Williams 20-S pulverizer.
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60 ton 2 compartment storage bin with clam shell gates.

TRUCKS—TRAILERS

1½-ton Ford & Chevrolet.
2½-ton GMC, New and rebuilt.
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2,000 gallon tanks on semi-trailer mounting.
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6x6 7½-ton Reo

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New JXD Hercules Gasoline.
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Pavers & Mixers

Ransome 34E dual drum, new October, 1943, with 36'9" boom, 1000 gallon auxiliary water tank, Cummins engine, rebuilt.
Jaeger Model 14DL, non-tilt mixer, rebuilt.

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Jaeger type "L" double screed, 10½'-12½', rebuilt.
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Blaw-Knox gas-electric 10½'-12½', rebuilt.
2 Koehring 10'-12', rebuilt.
Koehring 10'-16' finisher, rebuilt.

Concrete Spreaders

Blaw-Knox type SA 10'-15' spreader, new 1943. New condition.

Concrete Road Forms

830'—Truscon 7"x8" forms, with stakes.
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4450—Heltzel 9"x8" forms, with stakes.
1430'—Heltzel 10"x8" forms, with stakes.
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36"	6	1/8" — 1/16"	20"	4	1/8" — 1/32"
30"	6	1/8" — 1/16"	18"	4	1/8" — 1/32"
30"	5	1/8" — 1/16"	16"	4	1/8" — 1/32"
26"	5	1/8" — 1/32"	14"	4	1/16" — 1/32"
24"	5	1/8" — 1/32"	12"	4	1/16" — 1/32"

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	16"	6	10"	5	5"	5
	14"	6	8"	6	4"	5
	12"	6	8"	5	4"	4
	12"	5	6"	6	3"	4

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P&H Model 1055 High Lift Shovel. Buda Diesel
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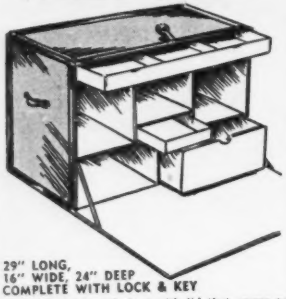

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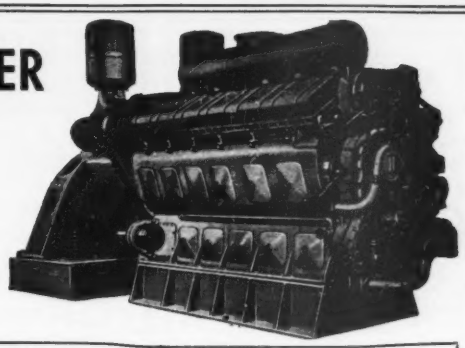

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OFFICIAL PROPOSALS
(Continued from page 118)

Bids: December 22, 1949 (454)

Route 5 & 6 Connection

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTES 5 and 6 CONNECTION

For the construction of Routes 5 & 6 Connection, from Fifth Street at East Homestead Avenue to Route 5 in the vicinity of the Grantwood Boulevard Overpass, Borough of Palisades Park, Bergen County. Length 0.323 miles.

Estimated:
6,500 cu. yds. Roadway Excavation — Earth
1,500 cu. yds. Roadway Excavation — Rock
6,400 sq. yds. 4" Macadam Base Course
6,400 sq. yds. 2" Mod. Pen. Macadam Inter. Course
622 tons 2" Pavement, Type MA-BC-1

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, New Jersey, on Thursday, December 22, 1949, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: Spencer Miller, Jr.
State Highway Commissioner

Bids: December 22, 1949 (452)

Roadside Improvement

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROADSIDE IMPROVEMENT
BLUE STAR DRIVE—ROUTE 29, SEC. 9C

For the roadside improvement on Blue Star Drive, Route 29, Section 9C, from the vicinity of North Drive, Sta. 811+28, to Mountain Avenue, Sta. 770+0, Somerset County, Length 0.782 miles.

Estimated:
36 Trees—Deciduous
164 Trees—Small & Flowering
57 Trees—Evergreen
25 Shrubs

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, New Jersey, on Thursday, December 22, 1949, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

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Signed: Spencer Miller, Jr.
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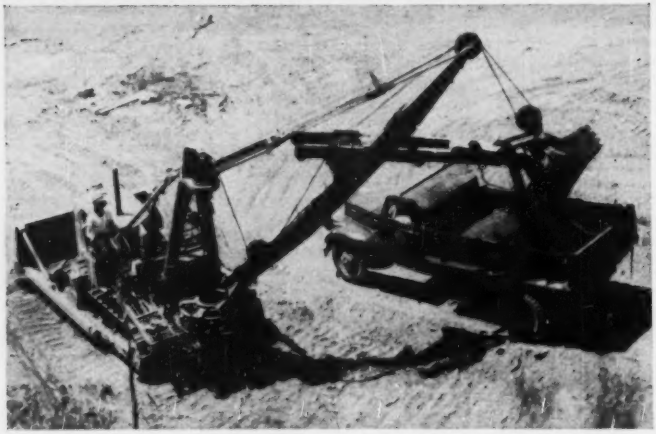

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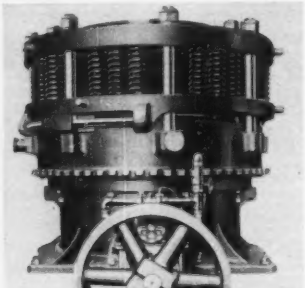

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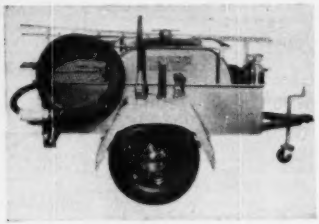
Two new Telsmith Gyrasphere crushers have just been announced. The Style S standard Gyrasphere features: Larger roller-thrust bearings located at the top of the eccentric to transmit crushing pressures from the bottom of the head directly into the main frame; longer crushing stroke for greater capacity; eccentric bearings have more bearing area in the upper zone of greatest crushing pressure; longer springs pass larger pieces of tramp iron; and main drive gear located at bottom to assure more permanent alignment and longer life. The Style S is available in 24, 36, and 48-in. sizes with either coarse or medium bowl. The Style FC fine crushing Gyrasphere has the same structural improvements as the Style S, plus: a feed distributor for even feeding and more uniform product; more springs to handle greater crushing pressures; different shape of mantle and concave with longer parallel crushing zone; and new self-tightening gun-lock-type mantle and concave holding devices. The Style FC is available in 24, 36, and 48-in. sizes with either medium or fine bowls.—SMITH ENGINEERING WORKS, 500 E. CAPITOL DRIVE, MILWAUKEE 12, WIS.

Brake Lining; Clutch Facing

Two new products are announced by Johns-Manville. Wire-Klad is a wire-reinforced brake lining featuring a new type of flexible wire-mesh reinforcement. It is said to have excellent bonding characteristics, to have high rivet-holding strength, and to permit deep countersinking of rivet heads. S-W (spiral-wound) facing is made of asbestos-metallic yarns and features flexibility in handling. Advantages include: Low variation in torque under a wide range of temperature and load conditions; minimum chatter; and improved cushion-clutch action in service.—JOHNS-MANVILLE, 22 E. 40TH ST., NEW YORK 16, N. Y.

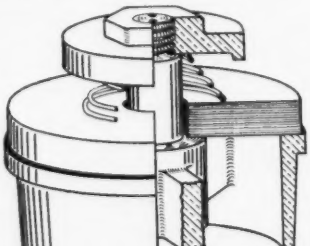
Fiberglas Pipe Insulation

Glass fibers bonded by a thermosetting binder are accurately molded in cylindrical form in all standard sizes up to 30 in. This Fiberglas molded pipe insulation will withstand temperatures up to 800-deg. F. It is available with a 4-oz. canvas cover as standard; or with a heavier canvas or 35-lb. roofing-felt jacket.—OWENS-CORNING FIBERGLAS CORP., TOLEDO 1, OHIO.



Fire-Fighting Trailer

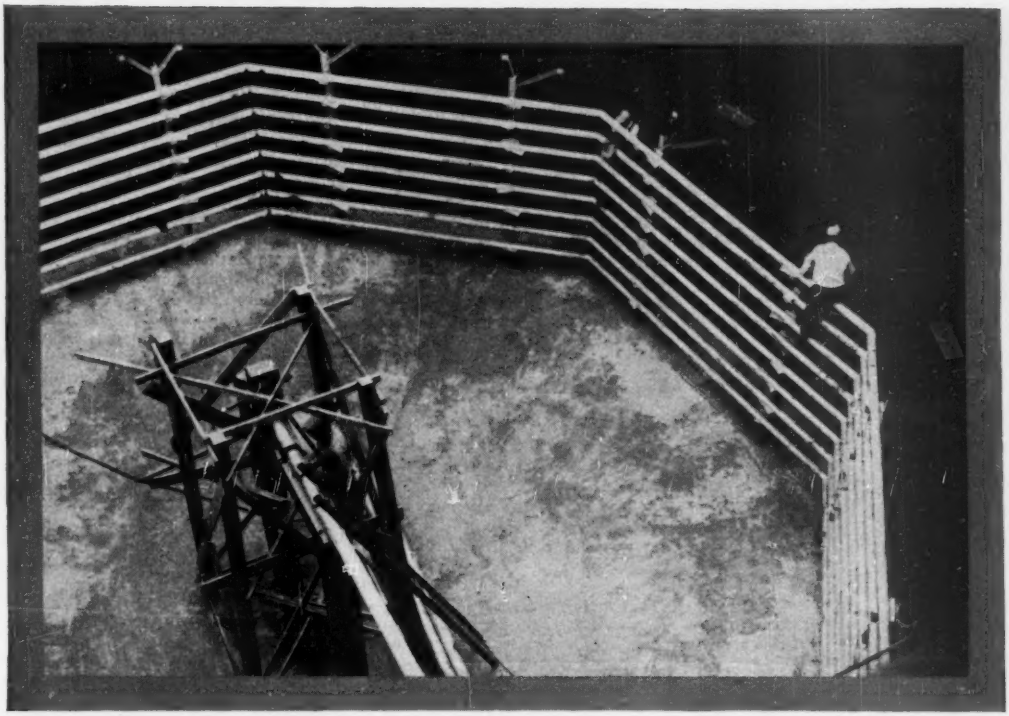
Porto Pumper unit is equipped with a rotary positive-displacement-type rubber gear pump powered by a 4-cycle gasoline engine. It has a 200-gal. water tank which can be used while hydrant or other supply of water is made available. Porto-Pumper pumps water from any source—hydrant, well, ditch, pond, or stream. A fog nozzle can be used where water vapor is desirable. The 95-lb. pump can be demounted and carried to any source of water in the event of inaccessibility by the vehicle. Equipment supplied with the unit includes 200 ft. of hose, ax, and hand extinguisher. Measures 6x9 ft.—PORTO-PUMP, INC., 227 IRON ST., DETROIT 7, MICH.



Reciprocating-Pump Valve

Valve is especially designed for use with reciprocating pumps, pumping any non-abrasive fluid, at operating temperatures up to 300-deg. F. and pressures up to 750 psi. (Special

(Continued on page 136)



Corrosion Fenced Out Here with Byers Wrought Iron heating coils

There is probably no service in the average sewage treatment plant where corrosive conditions are more severe, and where repairs are more difficult and expensive, than in the heating coils of digestion tanks. To safeguard the installation in the new facilities at Taunton, Massachusetts, the engineers—Fay, Spofford and Thorndike—specified wrought iron. Eight lines of 4-inch extra heavy Byers Wrought Iron galvanized pipe were installed by Hart Engineering, the mechanical sub-contractors and fabricators. Wrought iron pipe was also utilized for all gas piping, except in the operating building.

The selection of wrought iron for both these services follows accepted design practice, and is endorsed by performance records that testify to the superior durability of this time-tried material.

This durability comes, of course, from the unique structure and composition of wrought iron. Tiny fibers of glass-like silicate slag, threaded through the body of high-purity iron, halt and disperse corrosive attack. This discourages the pitting and rapid penetration that causes ordinary materials to fail prematurely. In addition, the fibers anchor the initial protective scale, which shields the underlying metal.

A number of applications of wrought iron, in digester coils and in many other treatment plant services, are illustrated and described in our bulletin WROUGHT IRON FOR SEWAGE TREATMENT AND DISPOSAL INSTALLATIONS. You will find this publication helpful when designing and constructing a new plant, or when repairing an existing plant. We will be very glad to send you a copy.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, Salt Lake City, San Francisco. Export Division: New York, N. Y.

CORROSION COSTS YOU MORE THAN WROUGHT IRON

BYERS
GENUINE WROUGHT IRON
TUBULAR AND HOT ROLLED PRODUCTS

model is available for temperatures up to 950-deg. F.) In the three-web seat, the center guide post is cast as an integral part of the seat, eliminating a threaded connection which might corrode and break. Free-tilting design of the valve plate causes it to open with very little suction pressure. Life of the plate can be doubled by reversing it when one side becomes excessively worn. The conical spring offers only a 4-lb. resistance. It will compress to a height of only ⅛ in. Valve and spring retainer is recessed to prevent damage when valve is fully opened. Hexagonal crown design facilitates changing valve plates without removing seat from the pump. — American Iron & Machine Works Co., 519 N. Indiana, Oklahoma City, Okla.

Three-Legged Tamper

Feature of the Triplex backfill tamper is the use of three tamping legs in place of the standard one. A safety feature is the fact that the tamper butts are held farther from the operator's feet. The Triplex has less than ½-in. vertical movement in operation, and requires 105 cu. ft. of 100-psi. air per minute. Shipping weight of the Triplex is 140 lb.— Gunderson-Taylor Machinery Co., 970 Cherokee St., Denver 4, Colo.

Vertical-Shaft Engine

A vertical-shaft-type engine develops 1¼ to 1¾ hp. and weighs approximately 35 lb. The Model VS-700 engines are available with or without mounting flange. They feature needle bearings as main bearings, quick starting and smooth running at slow speeds, and splash-type lubrication. — Clinton Machine Co., Clinton, Mich.

Rubber-Base House Paint

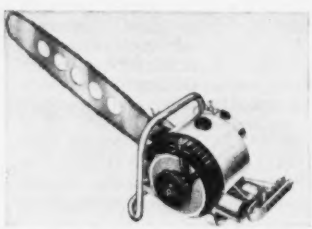
Rubber-base house paint features one-coat application, excellent gloss retention, durability, and ease of application. Its prime purpose it to provide a suitable paint for one-coat refinishing, plus the advantage of rubber, which is desirable in a house paint. Wood-Bond paint is supplied in white, and can be easily tinted with oil colors.— The Wilbur & Williams Co., Greenleaf & Leon Sts., Boston 15, Mass.

Truck Lifts Round Objects

Worksaver development provides tilting fork trucks with hydraulically operated fingers which grasp and pick up cylindrical objects without the use of pallets or skids. The fingers grasp the load from above permitting the stacking of containers as much as four layers deep. Truck lifts 15 fpm. with a 3,000-lb. load. Lifting, lowering, and closing of the fingers is controlled from levers at the front of the truck.— The Yale & Towne Mfg. Co., Philadelphia Division, Roosevelt Blvd. and Haldeman Ave., Philadelphia 15, Pa.

Concrete Curing Compound

Solution of synthetic resin and other agents combines to form a weather-resistant elastic blanket for curing concrete. R. I. W. Toxkure is applied by pressure spray or by using a wide soft-bristle brush, spreading on the basis of 400 to 450 sq. ft. per gal. It is available in two types—standard, and with a fugitive color which disappears without leaving any permanent color on the concrete surface. It is shipped in 5-gal. cans or 54-gal. drums.—Toch Bros., Inc., 2600 Richmond Terrace, Staten Island 3, N. Y.



Lightweight Chain Saw

Thirty-three-pound chain saw is driven by a single-cylinder gasoline engine. The chrome-plated chain features fast cutting action due to a narrow kerf and simple design which causes less drag and removes less wood. The complete line of Homelite saws include straight blade saws in 14, 20, 27, and 30-in. size, plus a non-binding bow saw.—Homelite Corp., 2009 Riverdale Ave., Port Chester, N. Y.

Steel Dual Valve

Valve No. 725 is a 36x8-inch 150-pound Class B steel dual unit for operating temperature of 1,000-degrees F. Powered by separate electric motors, each alloy-steel vane is operated independently insuring close control of volume and pressure. The No. 725 valve is designed for either a high pressure drop and small volume or a low pressure drop and large volume. It is available in all materials and in various combination of sizes.—R-S Products Corp., Wayne Junction, Philadelphia 44, Pa.

Spray-Gun Kit

Complete, easy-to-carry kit weighs less than 17 lb., including the gun. The Payswell self-contained gun combines a compressor, motor, and spray element in a single streamlined unit. Sprays a quart in 4 min. at 50-lb. pressure. Operates on 110-v. ac./dc. Features include pistol-grip handle and trigger-type switch. — Sellco Corp., Dept. Z-86, 801 Andrus Bldg., Minneapolis 2, Minn.

Drawing-Pen Cleaner

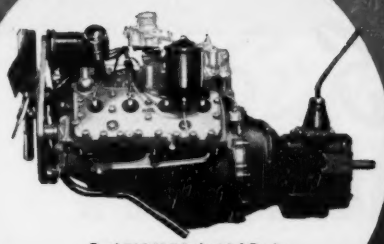
Speedy cleansing agent removes dried waterproof drawing ink from pens and other non-absorbent surfaces. Pen Cleaner is harmless to instruments, brushes, hands, and clothing, and is non-inflammable. Available in ¾-oz. bottles equipped with cropper stopper, 2½-oz. wide-mouth jars with screw cap, and in 16-oz. bottles.—Higgins Ink Co., Inc., 271 Ninth St., Brooklyn 15, N. Y.

Air-Line Shut-off Valve

Safety valve installed between compressed-air line and hose connection reduces air flow should a break occur

(Continued on page 141)

Here's why FORD Power is RIGHT 3 Ways!



Ford 239 V-8 Industrial Engine, with transmission. (239 cu. in. displacement)

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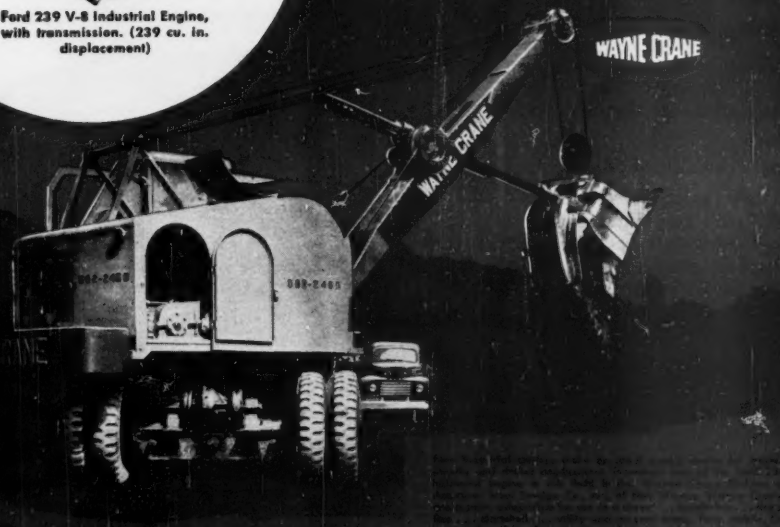
2 **RIGHT FEATURES** — the best and the newest in industrial power, direct from Ford's famed proving-ground laboratories.



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Style S standard

Outstanding—with its new, heavier design *and* many Telsmith-engineered improvements tested and proved by years of operation—the new Style S Standard Gyrasphere has . . .

1. Longer Crushing Stroke . . . for greater capacity.

2. Larger Roller-Thrust Bearings . . . both now located at top of eccentric . . . to transmit crushing pressures from *bottom* of head direct into main frame.

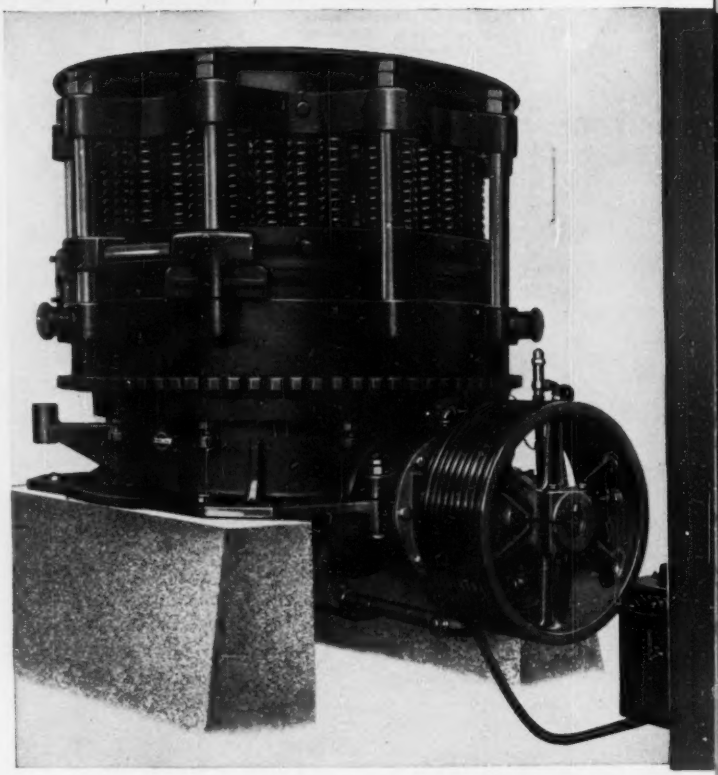
3. Eccentric Bearings have *more* bearing area in the upper zone of greatest crushing pressures.

4. Longer Springs . . . to pass larger pieces of tramp iron.

5. New Location of drive gears . . . for more economical operation.

6. Easier accessibility . . . makes maintenance quicker, simpler, and cheaper.

7. Available with either coarse or medium bowl.



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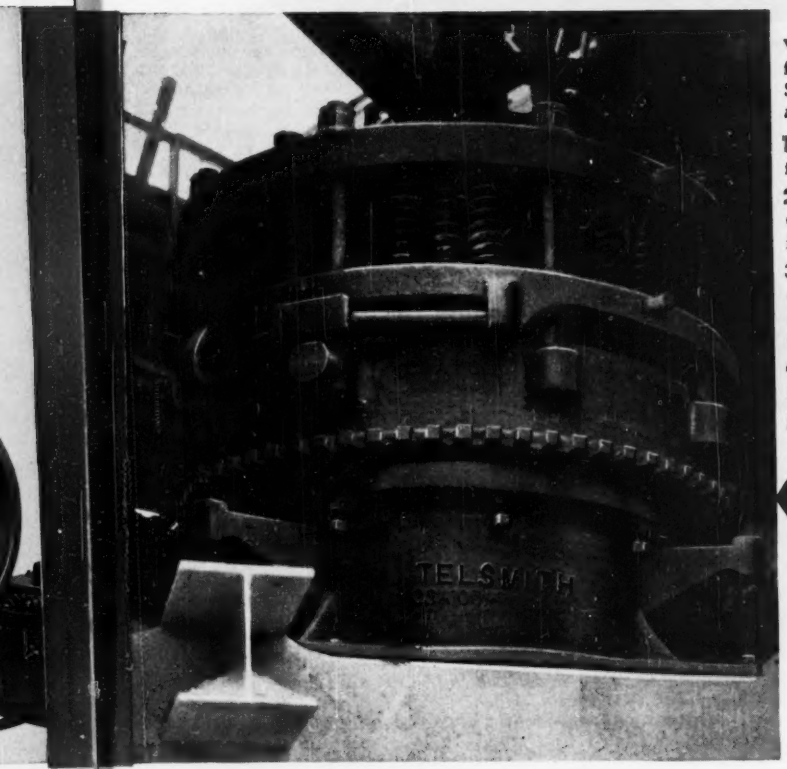
TELSMITH

Gyraspheres

Style FC

fine crushing



With all the new tested and proved features of the Style S... the new Style FC Gyrasphere has these *additional* fine crushing improvements...

1. New Feed Distributor... for even feeding and more uniform product.

2. Different Shape of Mantle and Concave with longer parallel crushing zone for finer product.

3. New Gun-Lock type mantle and concave holding devices... automatically self-tightening... easier to change.

4. More Springs for greater crushing pressures.

5. Available with either medium or fine bowl.

36FC Fine Crushing Gyrasphere at plant of New Enterprise Stone & Lime Co., Ashcom, Pa.

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in hose line. When brake is repaired, valve automatically opens and permits pressure to resume. Does not restrict flow or reduce volume of air being used and will operate under varying pressures.—Olin Gas Engine Co., 9 Lafayette Ave., Buffalo 13, N. Y.

Rubber-Tired Transit Crane

The Model 22-B transit crane features high-speed job-to-job mobility and a sturdy working base. Wheelbase is 181 in.; overall width is 8 ft. Two double-box outriggers, air brakes, Timken-Detroit axles, optional hydraulic booster steering, and 12-speed transmision are other features. The 22-B can be used as a shovel, dragline, dragshovel, clamshell, or crane. In excavator service, the buckets and dippers have a ¾-yd. capacity. Transmission chain and all gears, except the swing rack and pinion, turn through enclosed oil baths. All hoist, swing, crowd, and propel friction clutches are alike with interchangeable parts. For traveling, long booms are quickly folded with special equipment. Boom stop prevents raising boom beyond safe limits. — Bucyrus-Erie Co., South Milwaukee, Wis.

Glycol-Base Anti-Freeze

Boil-proof permanent anti-freeze has a 100-percent glycol base. It affords freezing protection far into sub-zero ranges. Chemical inhibitors prevent rust and corrosion. Winterset is guaranteed not to clog cooling system passages, harm paint finishes, or damage rubber hose.—Available in 1-gal. cans and 54-gal. drums.—Stone Distributing Co., Coshocton, Ohio.

Oil-fired Boiler

This unit, designed for radiant heating applications, is enclosed in a baked white enamel, sound-insulated cabinet. Oil-fired, it is quiet in operation, and provides low temperature water for radiant coils. It also has a large tankless heater for domestic hot water.—York-Shipley, Inc., York, Pa.

Manufacturers' Publications

Contact Aeration Sewage Plants—Title of new bulletin is "Refinite-Hays Prefabricated and Special Contact Aeration Sewage Plants". It contains 21 pages of descriptive information on principles of the process, outstanding features and advantages, applications, simplicity of operation and maintenance, how to "size" a plant, and complete engineering and cost details.—Refinite Sales Co., Omaha, Nebr.

Open Steel Flooring; Stair Treads—Sixteen-page catalog describes the complete line of Bates grates. Feature of Catalog 500 is a description of the advantages of the fillet-welded hexagonal cross bar used by Bates. The catalog also features a series of photographs showing typical installations of open-steel flooring and stair treads. Other data include suggestions on how to obtain accurate information on Bates grates, and a table of safe loads.—Walter Bates Co., Inc., Joliet, Ill.

Portable, Utility Trencher—Model 80 Trenchmobile is subject of 8-page folder. This one-man-operated pneumatic-tired unit digs a 5 or 8-in.-wide trench to a maximum depth of 4 ft. Bulletin illustrates the unit in use showing its advantages of construction and operation. A table of condensed specifications provides complete engineering and dimensional data.—The Parsons Co., Koehring Subsidiary, Newton, Iowa.

Fenestration—New concept in fenestration that combines the advantages of light-directional glass block and the conventional double-hung window in a single unit is presented graphically in a 4-p. pamphlet. Sketches of the new fenestration in single and multiple units as well as in ribbon fenestration are shown. Also included are drawings of typical construction details.—American Structural Products Co., Toledo 1, Ohio.

Freight Elevators—Buyer's guide to freight elevators lists data on design, types and component parts, lifting capacity and size, speed requirements, control, door operation, layouts, application examples, budget-price data, and installations. — Westinghouse Electric Corp., Elevator Division, Jersey City, N. J.

Sizing of Excavators; Hauling Equipment—Twenty-four-page bulletin deals with the proper sizing of excavators and hauling equipment. It deals with proper sizing and proper synchronization of hauling fleets with excavator to obtain maximum output and minimum delay in job operations. Performance tables in relation to factors involved are given in the text and formulas upon which these tables are based are developed in an appendix to the bulletin. Copies of Bulletin 3 are available at 50¢ each; free to engineering schools and colleges. — Power Crane & Shovel Association, 74 Trinity Place, New York 6, N. Y.

Corrosion Service Piping—Comprehensive description of corrosion service piping is contained in 32-p. Catalog No. 485. This bulletin describes the Iron Pipe Size standard and how it is applied; presents the case for welding corrosion-service piping; illustrates types of design tips; and describes the production of Taylor equipment. Listed in tabular form are dimensional data, production range, and other miscellaneous useful data.—Taylor Forge & Pipe Works, P. O. Box 485, Chicago 90, Ill.

Power-Wheel Buckets—Features of Haiss power-wheel buckets for rehandling listed in new catalog are: Speed, capacity, strength, low upkeep, rope economy, and compact dimensions. The catalog contains illustrations of the various items in the Haiss line; tables of specifications and dimensions of the various units; and other data. Also listed is a parts list accompanied by a drawing showing the location of each part.—George Haiss Mfg. Co., Inc., Div. of Pettibone Mulliken, 141st. and Park Ave., New York 51, N. Y.

Wall-Form Construction—System of wall-form construction is listed in 34-p. catalog. Illustrations show details of the forming system in operation, and photographs show actual jobs where the Symons forms have been used. Blueprint illustrations and complete specifications are provided, as well as data on material and equipment necessary, time required, and cost figures.—Symons Clamp & Mfg. Co., 4625 W. Diversey Ave., Chicago 39, Ill.

Fire-Rated Partition—Blueprint folder describes a recently developed one-hour fire-rated 1¼-in. solid partition for non-bearing wall construction. This partition consists of perlite or vermiculite gypsum plaster applied over 2.5-lb. diamond-mesh expanded metal lath to an overall 1¼-in. thickness.—Metal Lath Manufacturers Association, 636 Engineers Bldg., Cleveland 14, Ohio.

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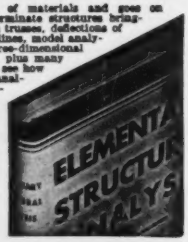

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READER COMMENT

Another Wettstein Admirer

Sir: E. Walter, president of Porete Manufacturing Corp., should be commended for his letter in ENR Oct. 20, p. 100, in which he points out the merit of Mr. Wettstein, one of the pioneers in the field of prestressed concrete. Wettstein's prestressed concrete slabs and boards were thoroughly investigated and tested in the Building Materials Institute of the Technical University in Prague under the direction of Prof. F. Klokner and the writer, and a condensed report on these investigations was published by the writer in Technical Encyclopaedia (Teyssler-Kotyska), vol. XV, pp. 335 and 336.

J. J. POLIVKA
Consulting Engineer
Berkeley, Calif.

Building Codes Need Restudy

Sir: The letter from the Pacific Coast Building Officials Conference (ENR Nov. 3, p. 96) indicates willingness to achieve building code unification through adoption of the whole or part of existing model codes. It suggests the adoption, under the aegis of building officials, of the best material from model codes as the desirable method of development of a national building code.

Seemingly, two vital considerations are entirely overlooked: First, that the preparation of codes is even more the direct concern of the building industry than it is the concern of the policing officers, the building officials; and second, that the adoption of any part of any model code should be preceded by a careful examination of the validity of that part.

The proponents of the model codes seemingly are unable to see the forest for the trees. Emphasis is being placed not upon the prime objectives of regulation but upon the method and provisions each group has evolved. There are more things wrong in the model codes than the differences between them.

The whole matter of building regulation requires re-evaluation in terms of intent and purpose. Are the end objectives correct? What should be the prime objectives under each category? How can these objectives be achieved without unreasonably hampering the building industry? Are there basic flaws in the approach itself?

In the writer's opinion the greatest progress in regulation was achieved by the small code committees made up of architects and engineers, with one representative from the building officials in the person of Rudolph P. Miller, that operated under the sponsorship of the Department of Commerce in the years preceding 1932. These committees did excellent work in preparing basic recommendations for fire resistance, live loads, and exits, which are still widely used in building codes. Similarly representative professional committees are needed at the present time to define prime objectives and to resolve the confusion all too evident in building regulation.

EMIL J. SZENDY
Building Code Consultant
Cleveland 14, Ohio

Structures and Test Models

Sir: For some years, I have been investigating the use of models for estimating the stability of and stresses in structures. Therefore, I have read the dissertation, "Mirrored Model gives Slab Moments," (ENR July 7, p. 70) and the editorial, "Structural Analysis by Model," (ENR July 14, p. 21) with great interest. But I must say that the mirrored model only can give slab moments on the assumption that Hooke's law is in force, whereas at the moment of rupture, Hooke's law is not in force. The described method, therefore, does not give the true strength of the structure.

In many cases, the described method certainly will satisfy the needs of the designer. But in the discussed example, the slab is so irregular that, I believe, the moments will be equalized by plastic flow. If this is considered, steel will be saved. The computation of such irregular slabs, considering plastic flow, was solved by K. W. Johansen (Brudlinieteorier, Copenhagen, 1943, and Pladeformler, Copenhagen, 1949, both in Danish).

If the stability of and stresses in such a structure is to be estimated by tests on models, the same material should be used for the model as for the structure. I have made such tests (see H. Vogt: Betragtninger og undersogelser over modelforsog Bygnigsstatiske meddelelser, Copenhagen, 1947, No. 3, and Betrachtungen und Untersuchungen uber Modellversuche in Die Bautechnik, 1949, p. 59, and Allgemeine Betrachtungen uber den Spannungsgradienten, in print in Die Bautechnik). These tests prove the importance of complete correspondence between the working diagrams for original and model. Similar correspondence is essential for the modulus of elasticity, yield point and breaking stress. With steel or duralumin, a sufficient degree of correspondence was found when the scales of model and original were in ratios of 1:2.5 or better.

The investigations and researches show that this territory is partly untrodden ground calling for systematic research. On account of the importance of these problems, the foundation of the Otto Monsted Corp., Copenhagen, has given an endowment to the writer for such research.

HELMUT VOGT
Baurat
Rendsburgerlandstr. 85
Eckernforde, Germany

Limitations of Beam Table

Sir: I was very much interested in comparing the table in "Laterally Unsupported Beams Selected from Table," (ENR Nov. 17, p. 46) with the one I compiled in "Tables Aid in Designing Laterally Unsupported Beams" (ENR Mar. 18, 1948, vol. p. 438).

Mr. Martin deserves credit for his attempt to make such a table with only two columns as compared with four in mine. However, I have found cases where his table will give beams that are overstressed.

For example, in selecting a beam when M is 49 ft.-kips and the length of lateral unsupport is 15 ft., using Mr. Martin's formula:

$$C = \frac{49{,}000 \times 12 \times 15 \times 12}{12{,}000{,}000} = 8.82$$

From the table, the first beam is 8WF28. By investigating further, it will be found that the 8WF28 will be stressed to 24,200 psi. which is 4,200 psi. more than allowed.

It is apparent that Mr. Martin's table is not true in every case because he has ignored a limitation in the derivation of criterion C, and that is, when Ld/bt is less than 600, the maximum allowable stress is 20,000 psi. His equations are true only when Ld/bt is equal to or greater than 600.

Also, there appear to be several typographical errors: In the first beam column, 14WF96 should read 16WF 96. In the second beam column, 14WF88 should read 16WF88; 14 WF78, 16WF78; 15WF68, 14WF 68; 12WF71, 16WF71; 24I76, 24WF 76; 14WF64, 16WF64. In the third beam column, 14WF58 should read 16WF58; 14WF50, 16WF50; 14W F45, 16WF45. In the fourth beam column, 12M20 should read 8M20, and 7I90, 7I20.

WILLIAM P. STEWART
Structural Engineer
Zimmerman & Day
Philadelphia, Pa.

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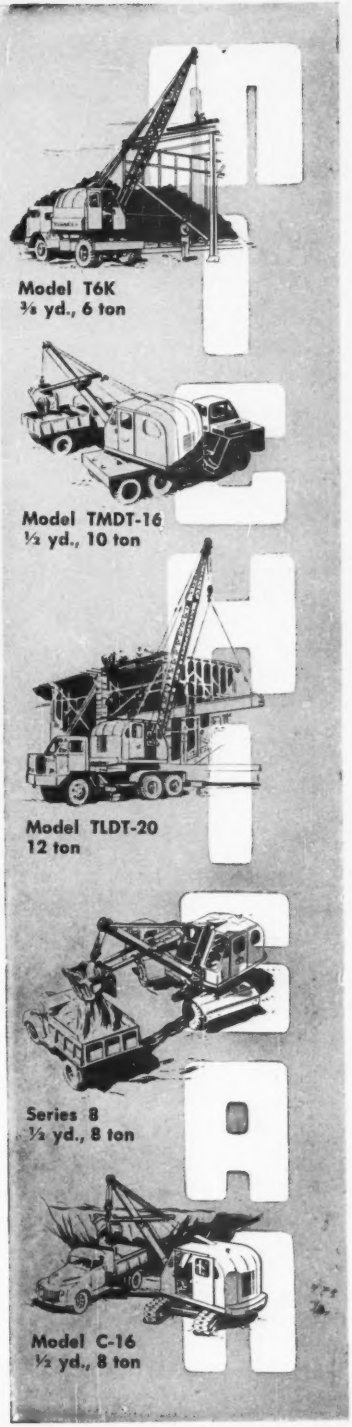

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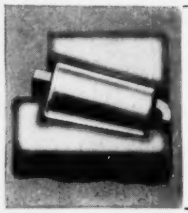

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